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The Rise and Fall of Maya Civilization

THE RISE AND FALL OF MAYA CIVILIZATION



BY

J. ERIC S. THOMPSON

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To Florence
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Preface

FOR REASONS explained in the text I have not given individual credit for the many discoveries in the field and at the desk which have made possible the writing of this book. Nevertheless, I wish to express my indebtedness to my colleagues and, particularly, to my fellow members, past and present, of the Department of Archæology (formerly the Division of Historical Research), Carnegie Institution of Washington. I have drawn heavily on their ideas, and owe much to them for their constructive criticisms of the manuscript of this book. The drawings are the careful work of Miss Avis Tulloch, staff artist in the department. All photographs without a credit in the text are from the files of Carnegie Institution of Washington.

It is a pleasure to acknowledge how much I owe to my Maya friends and workmen. In their homes and around camp-fires they taught me much. Most important of all, study of the breakdown of Maya culture led me, after many years in the wilderness of agnosticism, back to the Anglican Communion.

To William of Wykeham, who cast his bread upon the waters, I return these crumbs after many days.

J. ERIC S. THOMPSON

Harvard, Massachusetts

June 21, 1954

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*All except the skull rack and the two figures
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I. The General Background to Maya Civilization



*The glories of our blood and state
Are shadows, not substantial things;
There is no armour against fate;
Death lays his icy hand on kings:
Sceptre and crown
Must tumble down,
And in the dust be equal made
With the poor crooked scythe and spade.*

—James Shirley (1596–1666)

SOME PROBLEMS POSED

THE SIX centuries between the Emperor Constantine's conversion and the death of Alfred the Great, about A.D. 300 to A.D. 900, were dark and bloody for Europe. In the New World they were illuminated by the rise to its highest peak of Maya civilization. During those centuries Tikal, the largest of Maya cities, and scores of other religious centres reflected from pyramids, courts, and temples the fierce light of the Central American sun. Then the balance tipped, as it has done before and will do again. Western Europe passed into the age of faith and beauty, to which the great Norman and Gothic fabrics of Christendom bear immortal witness; the Maya cities were abandoned. The forest engulfed them and with the roots of its giant trees tore stone from stone. Tikal, deep in the forested Peten District of northern Guatemala, suffered its fate impassively for centuries, unvisited save, in recent years, by an occasional gatherer of chewing gum or the rarer archæologist or curious traveller.

In 1950 man won back a strip from the forest near the ruins, and made of it an airfield. Now one can fly to Tikal from Guatemala City in comfort; the paths through the ruins are perhaps sprayed with D.D.T. to guard the visitor from ticks, and Guatemalan guides spout in impeccable English cascades of unrelated information. This heady knowledge can be imbibed freely by the

pilgrim realizing that two hours later, in the modern bars of Guatemala City, he will be made aware of his return to what we call civilization.

Nevertheless, I have an impression that nearly all travellers as well as most readers of books on Maya civilization return from their journeys, physical or mental, curiously unsatisfied. They have been deeply impressed by great architectural wonders and magnificent sculptures erected in this remote area over a thousand years ago by a strange people which unaccountably has disappeared from the stage of history. Yet the story is given as a series of disconnected facts from which they feel remote.

The archæologist is partly to blame for the frequent failure of the non-professional to get a coherent impression of a past civilization. Because of the nature of much of the material he handles, the excavator is deeply interested in minutiae. Scarcely perceptible changes in the shapes of everyday cooking-pots are often of considerable value in establishing relationships in time and space; the constituents of a pottery temper or the manner of drilling holes in stone or shell can be highly significant. Consequently, archæologists often infer from the particular to the general, and we are apt to fill our reports with detail to support our generalizations. We ape Crivelli in a different medium.

I have tried to avoid that approach. Many subjects which a book of this nature usually covers are hardly mentioned; the reader will have to turn to other sources for detailed information of such matters as the clothing, weapons, slavery, commerce, and farming methods of the Maya. Instead, I have tried to concentrate on material which bears directly on the subject of the book, the rise and fall of Maya civilization and what may have been the causes.

As a prologue, I shall give some impressions of my own visit to Tikal, made long before an air-strip was cleared there to facilitate the shipment of chewing gum from the Peten forest.

On that visit to Tikal, over twenty years ago, we arrived on muleback after losing our way and spending an uncomfortable night in an abandoned, flea-infested camp of chewing-gum gatherers. There was something Chaucerian about the journey of seven days from that modern Tabard Inn, the ramshackle International Hotel in Belize, up the Belize River two days in a launch, and then five days by mule from El Cayo via another Maya city, Uaxactun. We were in a sense pilgrims journeying leisurely to a

great shrine, and, as the mules jogged stolidly through the forest at three miles an hour, we had ample time, denied to the air traveller, for speculation on what awaited us.

On earlier journeys in the rain forest of Central America, the exotic surroundings had excited my interest, but with repetition the novelty had worn off, and the impression of the forest on my mind had become one of overwhelming monotony. On this journey, as on a dozen others, we followed endless, narrow, winding tunnels cut in the forest by chewing-gum gatherers. The trees met far overhead, letting through occasional dapples of sunshine or allowing a fleeting glimpse of blue sky or cloud. Below, the serried tree-trunks merged in a dull grey mass, and fallen trees wore the brown of decay. The dense foliage excluded the bright colours one associates with the tropics. Except for a careful eye for an overhanging branch eager to deal one Absalom's fate and a perpetual and largely unconscious struggle between mule and rider, one was free to dwell upon the past, when Maya civilization cut its first teeth on this self-same jungle and which it partly subdued on reaching maturity.

The descent of the trail into the great *bajo* of Tikal fetched me back into the present. That low swamp-land, perhaps a lake when Tikal flourished, is a sea of mud in the rainy season, but it was dry when we crossed it. The few feet of descent brought a complete change, very much for the worse, in the vegetation. Spanish cedars, mahogany, the ubiquitous sapodilla, from the wrinkled trunk of which, when it is slashed with a machete, raw chewing gum drips, and graceful cabbage palms gave place to a low, thorny scrub, from the branches of which numberless stinging ants might descend, like paratroopers, upon the rider who incautiously knocked against trunk or limb. The sun beat down on mules and riders as though in punishment for our hours of playing hide-and-seek with him in the tall forest; the strangely distorted branches of the thorn trees writhed like souls in Dante's hell.

The trail, which had been meandering southwards, swung to the west before ascending sharply into rain forest once more. Suddenly we glimpsed an awe-inspiring sight. Four of the great pyramids of Tikal, clad in foliage and surmounted by ancient temples of limestone, greyish white against the sky, rose high above the surrounding tree-tops, like green volcanoes with summits wreathed in white cloud. The pilgrims were at the gates of their New World Canterbury. Just as Chaucer's riders must have

lost sight of the cathedral as they hurried through the narrow streets of the city, so we lost our view of the Maya temples as we plunged into the forest in that abrupt climb from the edge of the swamp to the heart of the city.

The trail ascended for about 150 yards to where it crossed an ancient Maya causeway leading south-eastward to an outlying group (Fig. 1, page 17). There we were, so to speak, in the outer downtown district. Two hundred yards farther west, our eyes were caught by the great mass, to the right, of one of Tikal's huge pyramids, the blurred outline of its immense bulk rising through the sea-green foliage like the base of a submarine mountain. To the left were the dispiriting remains of two parallel mounds, which in better days probably had been the sides of one of those courts in which the Maya played their ball game with a solid ball of rubber a millennium before our western civilization had any knowledge of rubber or rubber balls. Imprecations of the muleteer, whose mules heeded only the task of skilfully picking their way across heaps of root-entwined rubble, echoed in another key the shouts of players and watchers and the thud of ball on pad or wall—a brighter wall not then in disrepair.

Beyond that narrow passage between pyramid and supposed ball court the trail enters the great court or plaza of Tikal, great not because of its size, but because, like the Forum of Rome, it is enclosed by great structures raised by the toil of thousands to a glory now passed and knit with a faith which was in vain. We unsaddled and hitched our mules to trees, units in what I would have called the virgin forest which compassed us about, had I not known that the forest had been felled in 1881 by the British archæologist, Alfred Maudslay, and again in 1904 and 1910 by expeditions of the Peabody Museum of Harvard University. Each time the tide of vegetation had engulfed the ruins anew; with the years, saplings had grown to giants, anchored to the thin soil and the Maya-built floors beneath by buttressed roots. Lianas—some almost as thick as fire hose—hung from branches or were looped from tree to tree. A troop of spider monkeys chattered high in the trees that swept up the pyramid guarding the west end of the great court, a New World version of Omar Khayyam's "They say the lion and the lizard keep the courts where Jamshyd gloried and drank deep."

We scrambled up the eastern pyramid, clambering over the slides in the great stairway with the aid of some root working to

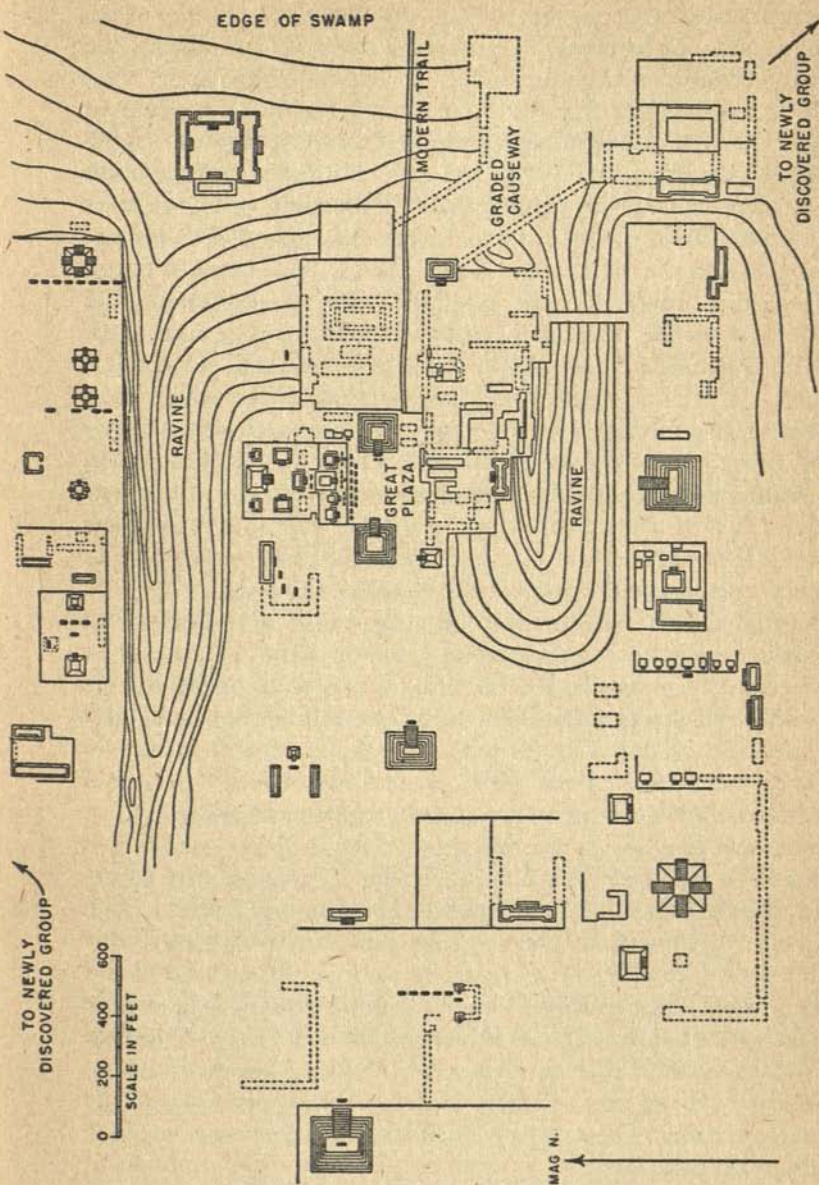


FIG. 1.—Plan of Part of Tikal.

Outlying groups are omitted for lack of space, and details of structures are simplified. Note the great court with its ranks of stelae, the huge pyramids at the east and west ends, and the "acropolis" with its massed smaller pyramids on the north side. The east-west length is just under three-fourths of a mile. Black rectangles represent stelae. (After Tozzer and Merwin, with additions.)

displace yet another stone of the step or some sapling which now must be a giant (Plate 4; Fig. 1, page 17). The terraced sides of the pyramid, broken by the actions of roots and rain, were masked by ferns and vines. As we got higher, the cactus-like pitahaya vine with thorny stems triangular in section warned us to climb carefully. The trees thinned out, and we were on the flat crown of the pyramid facing the temple on its summit. We turned to look down the broken stairway we had climbed. The height of the crest of the temple above the level of the court (allowing a few feet for collapse) is almost 160 feet, and each side of the base of the pyramid is a little over a third of a city block in length. So far as we know, there is no natural elevation enclosed in this mass, every cubic foot of which was built without anything that could be termed machinery. The builders were men, and, probably, women and children, who inhabited what is now this forested region 1,200 years ago; and they erected this vast structure not long after Augustine built the Saxon predecessor of the early Norman church, in turn replaced by the Canterbury Cathedral Chaucer's pilgrims journeyed to see. Gangs brought rock and rubble for the core of the pyramid; they faced the building-stone with primitive tools; they cut the wood to heat the lime-kilns; they shaped the sapodilla beams for the temple; and, finally, some of them may have given their lives to the building as sacrificial victims at its dedication. It is likely that their bones or their decapitated heads, each neatly enclosed between pairs of pottery bowls placed lip to lip, are beneath the walls or floors of the temple behind where we stood, or below the bottom steps of the stairway facing us.

From the doorway of the temple we looked out over the tree-tops whose range of hues was not unlike the contrasting green tones of shoal-water. Here and there trees with myriads of scarlet blossoms heightened the effect of a seascape, for they seemed like giant jelly-fish floating on the water's surface. Directly in front, to the west, the grey-white walls of three pyramid-supported temples rose like coral islands above the sea of foliage. A fourth, due south, could be seen by turning to the left. Nearer at hand, a swell in the foliage told of a large building below, not tall enough to break surface. At sunset or dawn deep shadows mapped the contours in better detail.

In ancient times one would have had an uninterrupted view across the city with its clusters of smaller pyramids topped by their temples, its multi-chambered buildings (miscalled "palaces" for

convenience), facing courts at different levels, and its endless surfaces of cream-white stucco relieved only by shadow and an occasional building or floor finished with red plaster.

In the great ceremonial court and in various smaller courts stood the stelæ, like sentinels, before the approaches to platforms and pyramids. Those limestone shafts, carved or painted with the static portraits of gods and with their hieroglyphic texts always recording that overwhelming preoccupation of the Maya with the mystery of time, are milestones in the history of the city. Every five or ten or twenty years a new one rose to carry forward the story of conquests, not of neighbours, but of the secrets of time and the movements of the celestial bodies. Such impersonal topics would have been unthinkable to the rulers of Egypt or Assyria, eager to commission the texts which commemorated the triumphs of their reigns.

Just as we forced our way through the tangled vegetation that crowded the courts and surged up mound and across terrace, so, in ancient times, a late arrival at some ceremony must have shouldered his way through the congregation which, packed in the court, intently witnessed a ceremony held on the top of a pyramid before the temple door. I could visualize the priest-astronomer, anxious to check his theories on the length of the solar year or the lunar month, threading his way from stela to stela to see what calculations his predecessors had recorded in the then distant past, or I could conjure up the acrid, sooty smoke of copal incense rising from clay braziers to a sky then fully visible from the great court.

We wandered through the forest, entering temples, climbing pyramids, and once disturbing a herd of peccary feeding on the cherry-like fruit of the breadnut. As darkness fell after that interlude of dusk so brief in those latitudes, we ate, in the ceremonial court, Maya black beans and canned Chicago pork. The mingling of the two foods—one the product of ancient agricultural techniques, the other processed in a modern factory—seemed to symbolize archæology's task of bringing past and present together.

The rest of the party bedded down in the great court; Agustin Hob, my Maya boy, and I, storm-lantern in hand, climbed to one of the Maya palaces on the south side of the court. Passing through a room, the plaster walls of which still showed crude sketches of daily life incised in the plaster 1,000 years ago, we slung my hammock, in a second room, from cross-bars of sapodilla wood placed in the vault even before the graffiti were made.

Agustin, lantern in hand, returned to the court, and I was left alone with my thoughts.

I thought of those sketches in the adjacent room. One showed a scene of human sacrifice, the victim tied to a frame; another represented a Maya god; several were of temple-crowned pyramids; others were little better than scribbling (Fig. 2, page 21). Who had made them? Surely not the Maya priests. My thoughts went back to schooldays and idly and crudely drawn caricatures of schoolmasters, of Dido and Æneas, and of a football hero making a pass, and then I had the answer. Of course, this must have been the building in which the Maya novices were lodged before initiation at some great ceremony. Tired as I was, I tried to picture those youths of a thousand years ago. Were they full of ideas for setting the world to rights? Did they accept authority, or were they in revolt against their elders? Did they accept the gods without question, or were they sceptical? Surely they complained to each other about the long periods of fasting and vigil. Or did they? What right have we to suppose that they reacted as modern young men would?

Why? How? What? When? Like the soporific rhythm of a Pullman car passing over points and rail-joints, the questions repeated themselves as I dozed in my hammock. How did this civilization arise? Why, unlike any other civilization in the world, did it come into being in tropical forest? When did it flourish? What hidden forces made it succeed? Why is it so like, but also so unlike, the ancient civilizations of the Old World? The questions danced across the vaulted room. The sand-flies began to bite as a full moon rose behind my head, floodlighting the temple atop yet another huge pyramid to the south. In the immediate foreground its beams strove to penetrate the foliage in the deep gully below, once dammed, probably to serve as a reservoir.

The sybaritic Mr. Keith of *South Wind* remarks in the course of one of his frighteningly long monologues, "I like to understand things because then I can enjoy them. I think knowledge should intensify our pleasures. That is its aim and object, so far as I am concerned." Man is by nature curious, and he is most curious about himself and his surroundings. Knowledge, even when not applied in a utilitarian manner, adds to our pleasure. If on a walk one can identify trees or birds or geological formations, the pleasure is increased.

Knowledge, then, gives pleasure. Any knowledge? Well,



FIG. 2.—Maya "Doodling".

Designs incised in the stuccoed walls of Tikal rooms probably by bored or inattentive novices. Note litter, standard poles, man tied to a frame being speared, and views of pyramids, apparently with wooden ladders. (*After Maler.*)

hardly. Consider the kind of unrelated scraps of information one gets on a quiz programme: the diameter of the moon is 2,160 miles; St. Catherine of Siena was born in 1347; the second largest city in Arizona is Tucson; the tallest Maya stela is thirty-five feet high. All are facts of importance in their own contexts, but without intellectual stimulus if presented as isolated statements worth remembering. If we look at Maya civilization as a jumble of odds and ends, a sort of poking around in the back of an antique shop, we shall get little real satisfaction; we must look at the civilization as a whole to find out why it got where it did, and we should stroll around the gallery of civilizations and take a look at the other pictures. Naturally, this book cannot be a guide to the whole gallery; there is enough behind the eyes of the Maya Mona Lisa to keep our thoughts occupied for the present.

Bare facts by themselves do not fascinate us; they must be clothed with the play and counterplay which produced them. The defeat of the Spanish Armada in 1588 is a bald historical fact. It takes on meaning when it is shown as the culmination of a play of forces and the clash of the opposing temperaments and philosophies of two nations, personified in the characters of Philip the Second and Elizabeth. To understand those antagonisms, one must know the cultural backgrounds, the ways of thought, and the conflicting traditions of the two peoples. One must study *Torquemada* and Chaucer, John of Austria and Latimer, the choir stalls of Toledo cathedral and the fan vaulting of St. George's, Windsor, and even the dances and field sports of the protagonists. Those are the tesserae of the mosaic of history.

It is not enough then to illustrate Maya civilization with descriptions and photographs of its outstanding accomplishments in architecture and sculpture, astronomy and arithmetic. One must, as far as possible, show in the details of the daily life of the Maya and in studies of their religious conceptions and of their philosophy of life the soil in which those more spectacular manifestations of their culture germinated and grew to fruition.

We shall, unfortunately, never know the Maya as we know sixteenth-century Spain or Elizabethan England, but, in time, by integrating all sources of information, we should have material which will satisfy the man interested in this peak of intellectual achievement in pre-Columbian America, and which will at the same time be of value to the student of comparative history.

The purpose of research in every field, as Laurence Housman

said, is to set back the frontier of darkness. With so many frontiers of darkness, even in the study of man, why choose Maya civilization? To that, I think, the answer must be that Maya civilization not only produced geniuses, but produced them in an atmosphere which to us seems incredible. One can never assume the obvious when dealing with the Maya, who excelled in the impractical but failed in the practical. What mental quirks (from our point of view) led the Maya intelligentsia to chart the heavens, yet fail to grasp the principle of the wheel; to visualize eternity, as no other semi-civilized people has ever done, yet ignore the short step from corbelled to true arch; to count in millions, yet never learn to weigh a sack of corn?

In its general aspects Maya philosophy closely parallels the Athenian, for "moderation in all things" was the key to Maya living, as it was to life in Athens. Yet to that philosophy the Maya added concepts which are utterly alien to western thought. The great theme of Maya civilization is the passage of time—the wide concept of the mystery of eternity and the narrower concept of the divisions of time into their equivalents of centuries, years, months and days. The rhythm of time enchanted the Maya; the never-ending flow of days from the eternity of the future into the eternity of the past filled them with wonder. Calculations far into the past or lesser probings of the future occur in many a Maya hieroglyphic text. On one stela at the city of Quirigua accurate computation sweeps back over 90,000,000 years; on another stela at the same site the date reached is some 400,000,000 years ago. These are actual computations stating correctly day and month positions, and are comparable to calculations in our calendar giving the month positions on which Easter would have fallen at equivalent distances in the past. The brain reels at such astronomical figures, yet these reckonings were of sufficient frequency and importance to require special hieroglyphs for their transcription, and they were made nearly a thousand years before Archbishop Ussher had placed the creation of the world at 4004 B.C. This was an appraisal of the ages which would have been utterly inconceivable to us even today, had not our minds been conditioned to their vastness by the writings of the astronomers and geologists of the nineteenth century.

Maya interest was not confined to this grandiose aspect of time. Not only the great periods of time, but the very days were divine, for the Maya held, and in some parts still hold, the days to be living

gods. They bow down to them and worship them; they order their lives by their appearance. Throughout history man has ascribed favourable or malevolent powers to certain days, but nowhere did those influences attain the importance with which they were invested by the peoples of Middle America. The life of the Maya community and the acts of the individual were rigidly adjusted to the succession of deified days with their varying aspects, for each day was a god who took a lively interest in his duties; happy and sorrowful days succeeded one another. Life passed in this pattern of sunshine and shade was not monotonous. It is not improbable that this strange form of predestination moulded the Maya character or, perhaps, was itself a manifestation of that character which recognized man's small part in an eternity not measured by 400,000,000 years.

There are other aspects of the Maya philosophy of time, such as the strange failure to distinguish between past and future in the prophetic chants. What had gone before and what lay ahead were blended in a way that is baffling to our western minds. Mysticism is not now fashionable, and so writers tend to stress the material side of Maya civilization, but surely it is precisely these (to us) strange aberrations of Maya mentality which pose the most interesting questions.

Why is this Maya mentality so different from ours? Did it produce Maya culture, or did Maya culture produce it? What of its effect on religious conceptions? Can an impractical culture be a successful one by standards other than our own? Did Maya civilization carry within it the seeds of its own destruction? Such, as I see them, are the mysteries that make the Maya a fascinating study.

Cultural behaviour—that is, the possible response of civilizations to laws which may govern their growth and decay—has been studied in recent years by writers such as Arnold Toynbee and A. L. Kroeber. To the solution of this problem a fuller knowledge of Maya civilization may make an important contribution.

It is clear that the course of cultural behaviour must first be reconstructed from the histories of peoples who have left documentary accounts, for archæology is the handmaiden of historical research, and a rather flighty handmaiden at that. Unfortunately, civilizations which have left their histories in writing, almost without exception, flourished in the Old World, and with every year it

is becoming clearer that in the Eastern hemisphere there were no natural barriers or ideological iron curtains to stop indefinitely the interchange of cultural elements. From the shores of the Mediterranean, across the Near East and South Central Asia, to the Indus and, beyond, to China, there were many two-lane highways carrying inventions, improved techniques, religious ideas, and philosophical reflections. Lesser one-way routes carried many of these elements into the remotest peripheries of Old World civilization. The whole was one loose cultural federation, the members of which benefited, sooner or later, from the advances and discoveries of each unit in it. For the elucidation of laws of cultural behaviour this is a most unprofitable situation, for if parallel solutions of a problem or similar mental attitudes appear, for example, in ancient Egypt and in ancient China, we cannot be sure that these did not result from diffusion of ideas, indirectly and perhaps with huge time lags, from one area to the other. Accordingly, only a region which was isolated for many centuries from this great cultural pool can be used to test supposed laws of cultural behaviour derived from study of the civilizations of Europe, Asia, and Africa.

The answer, of course, lies in the New World, isolated from the Old for many centuries. Unfortunately, the natives of the greater part of that hemisphere had no writing. One cannot weigh the potsherds and flint points from the archæologist's shovel against the full range of Athenian or Hindu culture. Even the advanced material cultures of ancient Peru—the incredible textiles of Paracas in the south, the gold-work of inland Chavin, or the magnificent portraiture in pottery of the north coast—tell us relatively little about the mentality and the general philosophical outlook of their makers. Ancient Peru's nearest approach to writing was the quipu, an elaborate system of knotted and coloured cords, which served as mnemonic records of such matters as population, crops, available labour, and tribute. There are details of Inca history, legends, and fairly full accounts of the Inca patrician-communistic state, but this material comes to us transmuted by the Spanish culture of the writers; it is no longer cast in the native pattern, even when, as in one case, the writer was part Inca.

The New World culture to set against those of the old is clearly the Maya, because it alone had a developed hieroglyphic writing. Furthermore, Maya writers of the sixteenth to eighteenth centuries transcribed in the Maya language, using European script,

much information on their vanished civilization. Original hieroglyphic texts, greatly expanded by word of mouth, seem to have been the source of part of these transcriptions; oral tradition, principally in the form of historical-prophetic charts within a framework of time, probably supplied the bulk. Hieroglyphic texts carved in stone and written in codices and the colonial transcriptions, together with data on the present-day descendants of the ancient Maya, supply us with a considerable body of material on Maya thought, which can be weighed against that of comparable civilizations of the Old World.

The study of Maya history makes evident the rather obvious deduction that certain moral laws apply just as much to the Maya as to other civilizations. For instance, Maya history underlines the universal truth that good ends can never justify evil means, for the simple reason that evil means can only distort and contaminate the end. It also supplies another confirmation of Jesus' saying that those who live by the sword shall perish by the sword. However, there is a big difference between finding new evidences of recognized moral laws and working out patterns of cultural behaviour. Whether the pattern will be found is, as I have suggested above, open to question, but, obviously, we must not restrict the search for truth to where we feel confident we shall find it. Were that the attitude of scientists or of scholars in the humanities, there would be little success in conquering the unknown, for success comes to those whom curiosity lures from the travelled highway. The grass is no greener beyond the fence, but it is often fresher. Intensive study of the problem of patterns of cultural behaviour may have to wait until more knowledge is accumulated; it will receive little attention in this book. For me, the supreme problems are what made Maya civilization succeed in ways that are not our ways, and how through its study one can bring home the truth our civilization hesitatingly accepts, that for nations and individuals spiritual values are far more important than material prosperity.

Finally, for those not attracted by these problems, there is the excitement of discovery. Archæologists are forever making discoveries, uncovering evidence, and following clues. We have an affinity with Sherlock Holmes—perhaps with Watson would be nearer the truth—so forward, for, in the immortal words quoted by the sage of Baker Street, "The game is afoot."

GEOGRAPHY AND ENVIRONMENT

Our grandparents thought the first man was made of clay; the Maya made him of maize. Neither was so far wrong as one might at first suppose, if one thinks in terms of cultures, for these, to a not inconsiderable extent, are moulded by the soil and its products; that is to say, their environments. The Vermonter and the native of South Carolina are of the same general stock, yet in less than 300 years they have diverged to a considerable extent, and those differences in outlook and temperament may well have been more marked 150 years ago than they are in this age when radio, television, and standardization of newspapers and magazines tend to produce uniformity. French Canadians and Frenchmen have grown apart, as have Australians and English. Vermonters, South Carolinians, French Canadians, and Australians descend from swarms departing hives which have reached cultural maturity and sent out their colonists fully conditioned to the ancestral culture, whereas, in the case of the Maya, their culture developed after they had settled their present territory.

As an illustration of the effects of environment, suppose the Maya had settled Ireland. There certainly would not have been that tremendous cult of serpent gods (unless Maya civilization had developed before the time of St. Patrick); the intimate rites to the maize deities, a great Maya preoccupation, would have been still-born, since maize will not reach maturity in the Emerald Isle; because of the rarity of limestone and easily worked and abundant supplies for cement-making, Maya architecture would have taken a different form; with no quetzal or bird with long tail-feathers, their characteristic treatment would not have dominated Maya sculpture; and one doubts whether Maya astronomy would have contended successfully with the clouded skies of Ireland. Maya philosophy and mentality? There we cannot say what effect, if any, a different environment would have had. Environment does much to shape culture, but of course it is not the only factor.

At the time of Spanish Conquest the area occupied by the Maya covered all Guatemala except parts of the low coastal strip on the Pacific, sections of western El Salvador and the western fringe of Honduras, the whole of British Honduras, and, in Mexico, the entire states of Yucatan and Campeche, the Territory of Quintana Roo, the state of Tabasco, except for a small area in the west, and the eastern half of the state of Chiapas. The area forms

a rough quadrangle with a north-south axis of rather over 550 miles, roughly equivalent to the distance from London to about the centre of Inverness. The east-west extension is rather less than 350 miles toward the bottom of the area; about 100 miles less at the top of the Yucatan Peninsula. The whole region falls within the tropics, with its southern boundary about Latitude $14^{\circ} 20'$ (see map, p. 29).

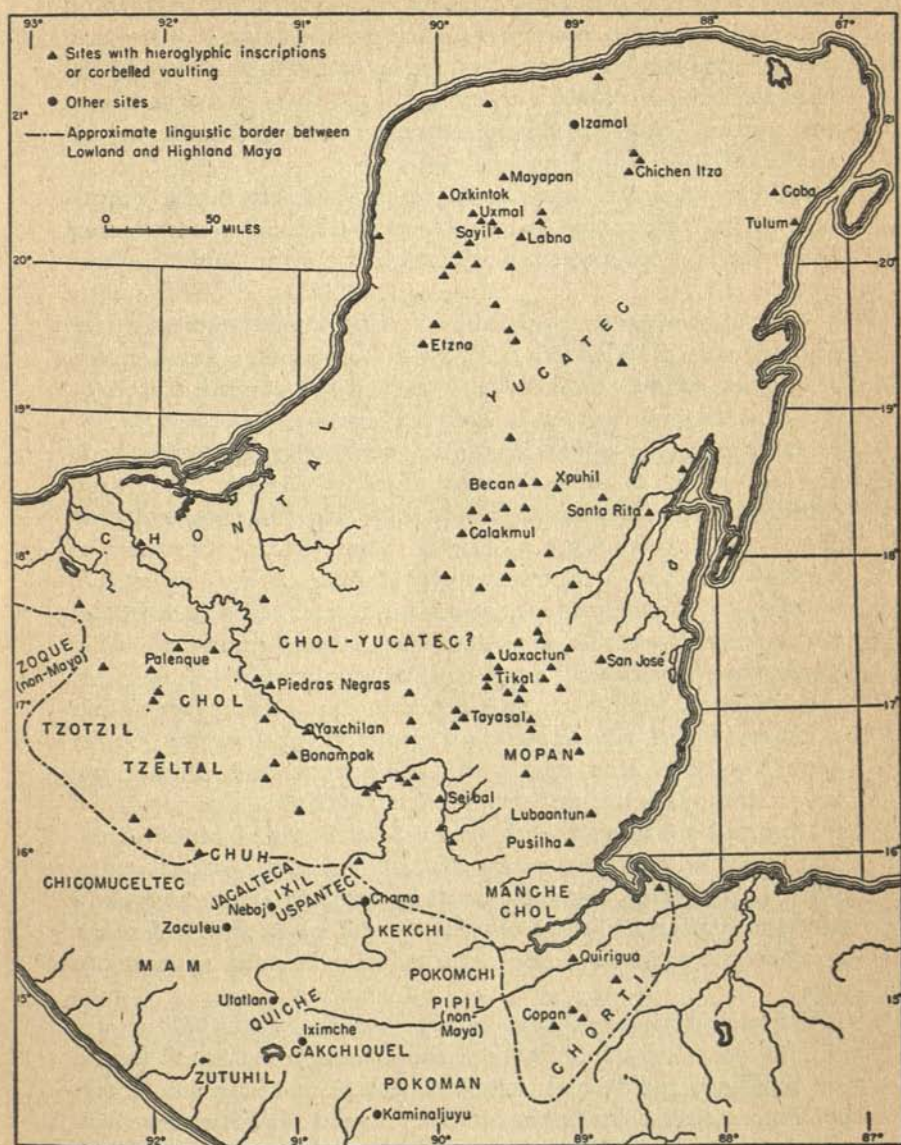
To the west of the Maya at the time of the arrival of the Spaniards there were groups speaking Zoque, Chiapanec, and dialects of the Nahuatl or Mexican language spoken by the Aztec and other peoples of central Mexico. South and south-east of the Maya were the Pipil, also Mexican-speaking, who occupied sections of the Pacific slope. The eastern neighbours of the Maya spoke sundry languages. Their cultures had been affected to varying degrees by influences from South America.

In cultural but not in physical contact with the Maya during the Classic period were four civilizations: the Zapotec, in Oaxaca, with Monte Alban as their greatest city; that which developed in famed Teotihuacan, about twenty-eight miles north-east of Mexico City; that termed La Venta, and often Olmec, which flourished in southern Veracruz, nearly in contact with the Maya; and that of north central Veracruz, typified by the splendid ruins of El Tajin and formerly attributed to the Totonac.

Archæological research has disproved the old theory that Maya civilization was alone in its glory; we now know that all five centres were contemporary, and that each drew inspiration from the others (p. 158). At a later date (*circa* A.D. 1000) Tula, situated in the state of Hidalgo, some fifty miles north of Mexico City, profoundly influenced the Maya.

In this book *Mexican* serves as a general term for the non-Maya cultures (except the Zapotec) of Mexico. Lack of space precludes frequent reference to the Mexican cultures, but their contemporaneity with, and influences on, Maya civilization must not be forgotten.

The boundaries of the Maya area during the Classic period seem to have been nearly the same as outlined above for the sixteenth century. Possibly the Maya extended a little farther west in Tabasco and Chiapas in early times. In the sixteenth century there was also a Maya-speaking group, the Huastec, isolated in northern Veracruz and adjacent parts of north-eastern Mexico. How they became detached from their fellow Maya has been the subject of



much conjecture. Perhaps they once formed a western extension of the Maya into southern Veracruz, where there are early Maya influences, and were later cut off from the main Maya group and driven northward by entering wedges of non-Maya stock. As the Huastec, although Maya in speech, did not share the traits which differentiated Maya from neighbouring cultures, their lands will not be considered as part of the Maya area.

Like the early Victorian novel, the government of the United States, or, for those who like an old favourite, Gaul, the Maya area is divided into three parts, the Northern, Central, and Southern areas.

The Southern area, comprising the Guatemalan highlands and adjacent parts of El Salvador, is highly mountainous. Peaks, many of volcanic origin, tower to great heights; towns nestle in mountain-girt valleys or sprawl on plateaus. Plants and animals of temperate climates flourish in this region, which only geographical co-ordinates place within the tropics. The soil, largely of volcanic origin, is fertile; the rainfall is generally adequate; the temperature is never excessively hot or unduly cold. To the north and on the Pacific slopes coffee grows under ideal conditions; wheat and potatoes are raised in the highlands, and on the Pacific seaboard sugar-cane and great banana plantations extend for mile after mile. Yet all these crops are of European introduction and for the most part are grown for export. In Maya times the principal crops were maize and beans, squash and sweet potatoes, and, on the Pacific slope, the cacao bean, a most valuable export crop, since cacao was in those days the universal currency of Middle America.

Highland Guatemala with its deep valleys and pine-fringed mountains, its colourful native Maya villages, and its crowning glory, Lake Atitlan, that aquamarine in its chased setting of mountain and volcano, is, indeed, the tourist paradise the folders describe. It must have been even more colourful 1,000 years ago.

In terms of native culture, the highlands had other advantages in addition to good soil and climate. Volcanic stone was handy for building, and from it excellent *metates* (rubbing stones for grinding maize) were fashioned. Deposits of obsidian furnished the raw material for sharp knives and spear points, and volcanic tuff, because it will stand relatively high firing temperatures, was a first-rate temper for potters. Iron pyrites served the highlanders for mirrors, and specular hæmatite was the basis of a much-used

red paint. Toward the close of Maya civilization, gold was probably worked from streams and copper perhaps mined.

The commodity which probably contributed most to the wealth of the highland Maya was the highly prized tail-feathers of the quetzal, for this bird inhabits only restricted regions of considerable elevation, particularly the north-western highlands of Guatemala and adjacent parts of Chiapas. The feathers, the mink coats of those days, but for male use, were traded far and wide. It is probable that jade, which was the diamonds and platinum of those days, was obtained from stream beds. It commanded a very high price on the Middle American markets. Until very recently no source was known, but deposits have now been found in the mountains north of Zacapa. The highlands were astride more than one of the great trade routes of ancient Middle America.

Despite every advantage of climate and soil, of variety of flora and fauna, of mineral wealth, fairly dense population, and strategic position, the Southern area does not seem to have contributed much to the spiritual advances of Maya civilization. In æsthetic development, notably in sculpture and architecture, it lagged far behind the other two areas, and the great Maya concept of time seems to have made little impress on the highlands. In the whole highland area there is not a single stela with a Maya hieroglyphic text, and, so far as we can tell, the great Maya calendar, with its ramifications into every corner of Maya life, never developed beyond a primary stage. Cultural influences of the lowland Maya from the north sweep up to the outer bastion of the highlands, and there stop dead.

It is hard to say why this great region, materially so advanced, should have been spiritually so impoverished. Earthquakes may have discouraged attempts to equal the architectural achievements of the lowlanders, but that does not explain failure to keep abreast of progress in other branches of arts and science. Beautiful painted pottery was made at one time in the highlands, but, most significantly, only in the northern bastion of the Alta Verapaz, where lowland influence was strongest. Painted stucco decoration was highly developed for a short period at Kaminaljuyu, on the outskirts of the present Guatemala City, but this was at a time when that city was dominated by alien influences, largely from Mexico, but to some extent from the Maya lowlands. This, again, seems significant. Material wealth often seems to be associated with spiritual poverty, and it may be that the situation in the

Guatemala highlands conforms to some ill-understood but conceivable balance between the two. The highland area, although Maya in speech and in the fundamentals of its culture, will not be given prominence in this book, and it is not necessarily included in generalized statements about the Maya.

The Central area, second in order but first in importance of the three territorial divisions, is that in which Maya culture reached its greatest height, and in this region hieroglyphic texts are most abundant. It comprises the lowland region lying north and north-west of the highlands, and the Chiapas uplands, which geographically might be reckoned a sort of transitional zone but which culturally and linguistically belong with the Central area. On the map (p. 29) the line between the Southern area and the Central area is drawn to include the lowland dialects of Chiapas in the latter. Note that not a single site with a Maya hieroglyphic text on stone or wood occurs south of this line. There are some texts on pottery from the highlands, but except on the edge of the lowland country, these texts appear to be largely ornamental. If one were to mark sites with corbelled vaultings, the same contrast would be almost as sharp. A limited use of corbel vaulting to roof tombs carries a short way over the line into the northern limits of the highlands, but except for such sporadic incursions and freak appearances of vaulted buildings at two sites in south-eastern Guatemala, probably an influence from Copan in the lowlands, the corbelled vault appears only in the lowlands and Chiapas.

The Central area is for the most part low-lying limestone country, from 100 to 600 feet above sea level, intersected by rivers and dotted in former times with lakes and ponds, many of which are now swamps as a result of silting.

The great core of this region, embracing the Peten District of Guatemala and the adjacent parts of Mexico and British Honduras, is now largely uninhabited. Within its bounds lie many of the greatest Maya cities, including Tikal, a journey to which opened this chapter. The description of the country on the way to Tikal is applicable to almost the whole area. It is an undulating land of vast tropical forest, with trees up to 150 feet high, interspersed with large swamps. To an observer without botanical training the outstanding features are the single mahogany trees scattered through the forest, the Spanish cedar, the giant ceiba, sacred to the Maya, many varieties of palms, and the sapodilla, from which chicle (the raw product of chewing gum) is bled. Typical, also, are

the breadnut tree (not to be confused with the breadfruit tree, but an important source of food for man and beast), occasional rubber trees and vanilla vines, and incredible numbers of aerial plants, bromeliaceæ, and lianas. Flowers there are, but for the most part they are hardly visible, far above one's head in the tree-tops. Hibiscus and oleander and the radiant glory of bougainvillæa are marks of civilization; they do not grow in the forest. However, orchids bloom, half-hidden, in the forks of trees. Where the forest is dense, undergrowth may be sparse, but when some giant falls, a tangle of vegetation springs up to fight for its place in the sun.

To raise their crops, the Maya had first to clear this forest with their inadequate stone tools. The large trees could be girdled with fire; smaller trees and saplings had to be cut with stone axes, and anyone who has worked in the woods knows how hard it is to cut small growth even with a steel axe. Saplings give to the blow; they are hard to cut. The task, without metal tools, must have been heartbreaking. Worse still, the land could be cultivated only for a year or two before being left to revert to forest.

There is plenty of life in the forest, but except for insects, birds, and lizards, it is seldom manifest. Jaguars and tapirs are not uncommon, but one seldom sees more of them than their tracks. Deer, peccary, wild pigs, the delicate agouti, and the sloth, as well as two varieties of monkeys, the spider and the howler, are more in evidence. The last fill the forest, particularly at night and at dawn, with their chorus of deep roars.

Parrots are quite common, and there are wild turkeys of the ocellated variety with greeny bronze plumage and peacock-eyed feathers. The curassow, despite its grace, is another welcome addition to the pot. Toucans and red-breasted trogons, first cousins to the quetzal, abound, but the land is too low for the quetzal. Macaws are not very common in most parts; they tend to shun areas under about 1,000 feet.

Rainfall is very high, particularly on the southern fringes of the area, where it may reach as high as ten feet a year. There is a dry season from late in January until May, but for the rest of the year the rains pelt down, except for a let-up some years in September and October or in December. In the rainy season the swamps and low points become impassable morasses; leather objects grow whiskers.

Groups of chewing-gum gatherers spend the rainy season, when

the chicle sap flows, deep in the forest, but their primitive camps are not permanent, and until a few years ago one could travel north from Flores, the tiny capital of the Department of Peten, for 150 miles through the heart of ancient Maya country without striking a single village, or one could follow the Pasión and upper Usumacinta rivers and strike across north-eastern Chiapas without encountering more than an occasional hut or a tiny settlement of the almost extinct Lacandon Maya, deep in the forest. The lack of population in this area which once teemed with Maya cities is largely due to the prevalence of malaria and hookworm (both almost certainly introduced from the Old World since the coming of the Spaniards), the lack of roads and natural resources, and difficulty in controlling the forest.

It has been suggested by more than one writer that the climate of the area has changed for the worse since the Maya ruled there, but the arguments advanced are not very convincing. Of interest in this connection is the fact that at Coba, in Quintana Roo, two great Maya causeways crossing the lake are now submerged below the water even at the height of the dry season, but that is not necessarily evidence of an increase in rainfall, for the lake may have silted or the causeways may have sunk under their own weight. Again, the level of water in an ancient reservoir at another Maya site seems to have remained constant, judging by the steps leading to it. At least, one can say that climatic changes have not been sufficient to alter significantly the flora and fauna of the region.

The Chiapas uplands present a different appearance, for the country, rising gradually to elevations of about 5,000 feet, is in part plateau covered with pine and savannah or belts of liveoak. There is also a small area to the south-east, in the vicinity of the great Maya city of Copan (elevation about 2,000 feet), which is mountainous, and the same is true of parts of British Honduras. Advanced Maya culture maintained a precarious lodgment in the Chiapas uplands and the mountains of British Honduras, but established itself successfully at Copan. Those regions, however, are the exceptions; by and large the Central area is composed of forest-clad lowlands, as already noted.

The central core of the Peten and adjacent regions is singularly deficient in natural resources, and the soil is scant except in the valleys. The ubiquitous limestone supplies first-rate stone for building and for sculpture and, in places, holds deposits of flint and chert, good substitutes for the absent, and in some respects

more useful, obsidian of the highlands. There is no igneous rock or metal in the region except in a small area of British Honduras, from which granite for making *metates* was obtained on a rather small scale by groups living on the edge of that district. Gold, too, occurs in that area (unlike the Peten, it is mountainous), but not in paying quantity, and there is no reason to believe it was ever worked by the Maya, who for the greater part of their history used no metal. Moreover, in the Classic period the central core of the Peten appears to have been off the most important commercial routes of ancient Middle America, but it did produce the highly prized cacao in some quantity, and no doubt it exported to the highlands other tropical produce, such as parrot, trogon, and toucan feathers, jaguar pelts, logwood dye, chile, copal incense, and smaller quantities of vanilla and rubber. It is probable that other specialties of the region, such as flint points, the hearts of palm trees (a kind of substitute for celery, relished by the Maya despite its bitter taste), painted pottery, and objects of rare woods, were also exported. These, however, were far less valuable commodities than those which the highlands could offer. A little of the imported jade was carved and then re-exported.

To me, one of the greatest mysteries is why Maya culture should have reached its greatest peak in this region so singularly lacking in natural wealth, where man, armed only with stone tools and fire, had everlastingly to struggle with the unrelenting forest for land to sow his crops. Moreover, when he had wrested the necessary area momentarily from the forest's grasp, he usually found a soil so thin and quickly weed-infested that after one or two crops it had to be surrendered to his enemy, who lost no time in covering it once more with dense vegetation.

Toynbee, in his *Study of History*, has cited numerous examples to show that the conditions under which a civilization will develop and live must be neither too soft nor too hard. His argument is convincing. Yet in the Maya lowlands we find conditions so unfavourable that it is not easy to see how Maya civilization could ever have developed there. Can it be that from our western point of view, conditioned by soft living, we over-estimate the difficulties? Perhaps to the Maya the obstacles were such as to produce the optimum response; that is, they stimulated him to put forth his best. That might well be the case. On the other hand, if the advocates of a deterioration in climate are right, conditions would not have been so onerous twelve hundred years ago.

The Northern area, the third division, comprises Yucatan and most of Campeche and the Territory of Quintana Roo. As one travels northwards from the Central area, the climate becomes drier, until at the extreme northern tip the rainfall is exceptionally low, a scant eighteen inches a year, about one-sixth of that registered for some parts of the Central area. This condition is reflected in the vegetation, which becomes more scrublike as one goes north. The limestone which covers the whole area is more porous than that of the Central area and lets the rain seep through to underground drainage systems, with the result that surface rivers are non-existent and lakes occur only along fault lines in the eastern part. Much of the country would be quite waterless were it not that in places the surface crust of limestone has caved in, giving access to deposits of water beneath. These natural wells, known as *cenotes*, a corruption of the Maya word *dz'onot*, together with some artificial wells and catch-pools, were, and still are, the sole source of water throughout Yucatan. Yet the country had and now has a considerable population.

This region, like the Central area, is poor in natural resources because there is nothing but limestone country; and in some respects it is even worse off, for some of the products of the Central area, such as cacao, rubber, and vanilla, do not do well in this more arid region. Cotton was an important crop and was widely exported in the form of woven and decorated mantles. The fauna is more restricted. Jaguars are found there, but monkeys, tapirs, and macaws are extremely rare or unknown.

Maya civilization at its height was more advanced in the Central area than to the north, but Yucatan is of prime importance because from there we have the fullest information on how Maya culture functioned at the time of the Spanish Conquest.

LANGUAGE AND POPULATION

There are fifteen Maya languages or major dialects still spoken and two more are recently extinct. Several have subdivisions which merge into one another. They form a group comparable to the Romance group of languages. Some Maya languages are closer to each other than Spanish is to Portuguese; others stand in approximately the same relationship as French to Italian. Quite possibly we should speak of two Maya languages, a highland and a lowland, and classify the rest as dialects. Maya is not

closely related to any other language of Mexico or Central America.

In the Northern area and the north part of the Central area only Yucatec (often called Maya) is spoken. South-west and south-east of this section, Chontal and Mopan were once spoken, and across the base of the Central area were spread Chontal, two branches of Chol, and lastly the Chorti dialect of Chol around Copan. In eastern Chiapas are found Tzotzil, Tzeltal, Chaneabal, and Chuh, the last extending into the Guatemalan highlands. All except the last are closely related, and as one travels southward from Yucatan there is a gradual and uniform transition from Yucatec to Tzotzil, the greater the distances apart, the greater the differences. This is strong evidence that no large movements of people have taken place for centuries, and that, therefore, Maya classical art and architecture and the considerable achievements in astronomy and arithmetic must be credited to the ancestors of the present lowland Maya.

The same correlation of distance and change holds good also for the highland Maya, the principal groups of which are the Quiche, Cakchiquel, Mam, Kekchi, and Pokomam. The transition is so gradual that it is often difficult to say where one language stops and another begins. As Andrade, the great authority on Maya languages, once put it, one would have to make the linguistic map in blending pastel colours, not in harsh reds and greens and yellows. It is equally clear that in the highlands there have been no marked displacements, although minor changes and expansions are on record.

Maya speech is musical and pleasant. Equivalents of our *d* and *r* are absent, and *r* appears in only one lowland dialect, but glottal stops (a sort of catch of the breath something like the bark of a sergeant-major) are frequent. Yucatec is spoken by many whites and mestizos of Yucatan as a second language and is said to be easy to learn. I haven't found it so!

The descendants of the Maya still exist in large numbers in many parts of the lands they formerly ruled, but in some regions they have been absorbed culturally and, to a certain extent, physically into the Latin-American mestizo population. As already noted, the Central area, except for its appendage, the Chiapan uplands, is now largely uninhabited. Karl Sapper nearly fifty years ago estimated that there was a Maya-speaking population of about 1,250,000, three-fifths of whom spoke highland tongues. To this

total should be added the smaller numbers who have lost their mother tongue and the many of mixed blood.

Estimates on the pre-Columbian population vary considerably. The lowest figures are 1,250,000 for the whole area (Kroeber) and 800,000 for the combined Northern and Central areas (Termer). Morley, on the other hand, estimated the population of the Peninsula of Yucatan alone at over 13,000,000. I have published an estimate of 3,000,000 for the whole Maya area in A.D. 800, the larger part of which would have been in the highlands. This may be a bit high; a figure of about 2,000,000 might be more satisfactory, but reliable data are so scarce that no figure is much better than a "guesstimate".

PHYSICAL APPEARANCE AND PSYCHOLOGICAL TRAITS

Physically the Maya are fairly homogeneous. Generally speaking the Maya is stocky, with strong muscular development in his



legs. He is broad-faced and has prominent cheek-bones. Features are soft and both sexes can be described as handsome, but very different in appearance from the conventional idea of the tall, slender Plains Indian (Plate 1). The men look more intelligent than the women. The Yucatec are among the most broad-headed peoples in the world, for the average cephalic index (length of head divided into the breadth) is eighty-five, with examples as high as ninety-three. No other Maya group is quite so round-headed, and in the highlands and the Chiapas uplands there are narrower-headed strains which pull down the average for the

group. It is probably significant that the Yucatec are both the most round-headed group. The Maya accentuated this round-headedness by deforming the skull.

Maya of pure blood have straight (or sometimes slightly wavy) black hair and dark brown eyes. The eyelids often show a rather pronounced fold which gives an almond shape to the eyes, also characteristic of the treatment of the eye in Maya sculpture. Many Maya have a fleshy, hooked, or rather aquiline nose, and somewhat drooping lower lip. These are the features which combined with the deformed forehead to produce the type of idealized beauty found everywhere in the art of the great period of the Central area.

By assessing the character and intelligence of the present-day Maya, we can get some idea of those traits in his ancestors who created Maya civilization, and as this civilization was surely a product of lowlanders, let us see what a study of the Yucatec, the best-known lowland group, reveals.

Some years ago Morris Steggerda persuaded a small group of American ethnologists, archæologists, and missionaries who had had rather close contacts with Yucatec Maya to rate them on certain psychological traits. The majority opinion included these traits: The average Yucatec Maya is socially inclined and likes to work in groups. He has strong family ties, but shows little outward affection. He is not quarrelsome. Though good-natured and sympathetic towards those in distress, he is fond of practical jokes. He is a keen observer, and he has a good memory. He is fairly intelligent, but not particularly inventive or imaginative or inclined to wander. He is fatalistic and superstitious, and not particularly afraid of death. His sexual life is not over-emphasized, but he has a strong tendency to alcoholism. He is thrifty and unusually honest. He is exceptionally clean in his person, bathing morning and night, and his wife is a neat housekeeper. Individuals vary in their desire to excel, in their religious enthusiasm, and in their attitude toward change. Murderers and beggars are exceptional in the Maya community.

My own answers agreed fairly closely with those set forth above, except that my observations in remote villages of British Honduras led me to believe that as individuals and as groups the Maya like to move from one place to another. I should also list corporal modesty as a very marked trait and give the Mayas a high rating for industry. I have noticed that unless a Maya has been



FIG. 3.—Maya Types of Classic Beauty.

These drawings show the features which constituted the Maya ideal of beauty: artificially deformed head with sloping forehead, almond-shaped eyes, large nose, drooping lower lip, and slightly receding chin. *a, b*, Palenque; *c*, Copan; *d, e*, Yaxchilan; *f*, water lily motif, Palenque. (*After Maudslay.*)

strongly influenced by Spanish contacts, he is little inclined to sing, and he is still less given to whistling a tune. I should consider the Maya highly religious, rather than merely superstitious, and should say that in his dealings he is formal and, judging by two friendships, one of over twenty years' standing, he can develop deep and lasting loyalties. Although generally pacific, he can be savage when aroused or when, under the influence of drink, hidden resentments come out.

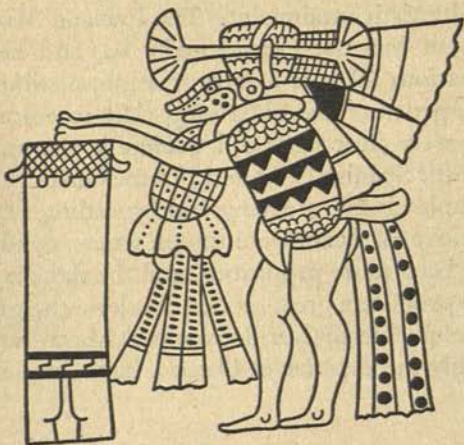
I think this estimate would apply pretty well to all lowland Maya groups of the present day, although some are not so clean and pacific as the Yucatec. It probably would have fitted the mass of lowland Maya in pre-Spanish days except in two regards: intelligence and artistic attainment. The lowland Maya of today is fairly intelligent but not exceptionally so, and he shows little artistic inclination. This is a retrogression, attributable perhaps to the submergence of the old ruling class in colonial times, although there were clear signs of a decline in the centuries immediately before the Spanish Conquest. In the Guatemalan highlands and Chiapas uplands fine weaving and brocading of textiles show that the old love of beauty continues where conditions for its survival have been more propitious, and the day may come when the Maya will produce a great modern leader—the great governor of Yucatan, Felipe Puerto Carrillo, was part Maya—as other Indian peoples, notably the Zapotec of Oaxaca, have done in Mexico.

SEARCH AND RESEARCH

Spanish priests and laymen of the sixteenth century were impressed by the architectural triumphs of the Maya cities which even in those days were falling into ruin, but their accounts of Maya civilization as it was when the land was conquered for Spain were hidden in reports for the most part mouldering unpublished in Spanish archives or New World friaries. It was not until 1785 that commissions visited the newly discovered ruins of the large Maya city of Palenque and prepared illustrated reports, which, together with samples of Maya sculpture and other arts, were sent to Carlos III and were promptly reburied in the Spanish archives. A copy of one of the reports found its way to London, where it was published in 1822, the first book on Maya archæology. The author was Antonio del Río, an artillery captain in the Spanish

army, who cheerfully told his sovereign: "By dint of perseverance I effected all that was necessary to be done, so that ultimately there remained neither a window nor a doorway blocked up; a partition that was not thrown down, nor a room, corridor, court, tower, nor subterranean passage in which excavations from two to three *varas* in depth were not effected."

As a result of the interest thus aroused, Count Jean Frédéric Waldeck visited Palenque, and stayed there for two years making plans and copying, for the most part with little accuracy, Maya sculptures in that most artistic of all cities. Waldeck was a peculiar character. He had fought in the army of Napoleon in Egypt, and



perhaps heard his leader's famed address to his troops in the shadow of the Pyramids. Later he served with that eccentric seaman, Lord Cochrane, in the liberation of Chile. At a time when most archæologists retire, he was starting his field work in the Maya area, at the age of sixty-six, and confounded opinions on the deadly properties of the Central American forest by living to the ripe age of 109. Indeed, his death, in 1875, in a street accident in Paris, is said to have been his own fault; he turned his head to look at a pretty girl. His title was bogus and so were many of his drawings. He depicted one Maya figure with a liberty cap and a delightful late eighteenth-century classical pose, and he converted other purely Maya sculptures into most convincing elephants, an artistic aberration which was to have repercussions nearly a century later.

Maya archæology had got off to a bad start—del Río bulldozing through the ruins (you can see to this day the melancholy results of his artillery tactics at Palenque), and Waldeck with his neoclassicism and elephants. There was to be another queer, although not harmful, chapter.

Lord Kingsborough, an eccentric character of Regency England, was convinced that the ancient peoples of Mexico and Middle America were descendants of the lost ten tribes of Israel, and he devoted the whole of his fortune to "proving" it. Between 1830 and 1848 his *Antiquities of Mexico* was published in nine enormous volumes, each one of which is almost too heavy for the average lady librarian to replace on a high library stack. These contained reproductions of native codices and sculptures and rare or unpublished accounts of native life, in full or in extract, together with Lord Kingsborough's interpretations to support his views. The set sold at £175, roughly the equivalent of about £750 today, and there were, not unnaturally, few purchasers. With his considerable fortune spent in the publication of these tomes, Lord Kingsborough was unable to meet the printers' bills for the final volumes and was cast into a debtors' prison, where he died after some time spent under conditions made familiar to all of us by Charles Dickens.

He deserved a better end. Much of the material he put on record was of inestimable value, and, indeed, to this day, his reproductions of two or three of the Mexican codices are the only ones in existence. In the volumes are included new material on Palenque and the first reproduction of the Codex Dresden, the finest of the three surviving Maya hieroglyphic books.

In 1839 an energetic native of New Jersey and graduate of Columbia University, John L. Stephens, decided to see the Maya ruins of which he had read in the accounts of del Río and others. To smooth his way, he got himself appointed special envoy of the United States to what was then the Central American Federation, a position which involved little work, since by the time Stephens reached Central America the Federation was in the last stages of disintegration. He took with him an English friend and accomplished artist, Frederick Catherwood. In this and a subsequent trip to Yucatan, the friends visited, largely on muleback, over forty Maya sites, most of which had not previously been reported. The two books which resulted from their travels—*Incidents of Travel in Central America, Chiapas, and Yucatan* (1841) and *Incidents*

of *Travel in Yucatan* (1843)—were best-sellers. In nine months the first book ran through twelve editions, and within a decade the combined sales of both reached some 25,000 copies, an extraordinary popularity for the period. Both books are still read, and have recently been translated into Spanish.

Stephens gave clear and interesting descriptions of the ruins they visited, free of all the twaddle about Atlantis and Egypt common in the nineteenth century. His accounts of life in Central America a century ago are vivid and delightful. Catherwood's contribution was the excellent illustrations of Maya ruins or sculpture, far superior to any thitherto published. Their accuracy may be judged by the fact that many of the glyphs in his engravings can be read with almost as much ease as photographs. Theirs was a fine team, and their two books are as fresh today as when they were written and illustrated.

With the publication of these travel books, interest in the Maya gathered momentum. To name all who contributed to knowledge of the Maya would be out of place in this book, but a word should be said of the activities of the Abbé Brasseur de Bourbourg, for it was he who brought to light and in some cases saved from destruction several of our best-written sources on the Maya.

Most important of these was Bishop Diego de Landa's history of Yucatan, written about 1560, a mine of information on Maya customs, religious beliefs, and history, together with a quite detailed account of the Maya calendar, illustrated with drawings of the glyphs. This was the indispensable foundation on which to reconstruct Maya hieroglyphic writing, and is as close to a Maya Rosetta stone as we are ever likely to get. Indeed, without this book it is doubtful whether we would have made any progress in glyph decipherment, and we would know very much less about the Maya. Bishop Landa, then a Franciscan friar, who reached Yucatan a few years after the Spanish Conquest, was a man of unquestionable ability. He has been much criticized for his severity in stamping out recrudescences of paganism, but in that he merely reflected the views of his century; namely, that the soul is more important than the body and the ends justify the means. Who are we to criticize? We have substituted political beliefs for the soul, and retained the second view. Landa, like any modern ethnologist, obtained his material from native informants. Oddly enough, had he not campaigned so violently against Maya relapses into paganism, we might not now have this prime source, for it was while he

was in Spain, awaiting trial on charges of exceeding his authority, that he whipped his material into shape to serve as indirect testimony for the defence.

Brasseur de Bourbourg also discovered part of one of the three surviving Maya codices, and saved many manuscripts from destruction when the monastic orders in Mexico were suppressed. On one occasion he purchased for four pesos at a secondhand book-stall in Mexico the manuscript of the finest Maya-Spanish dictionary ever made. This is the indispensable Motul dictionary, now one of the treasures of the John Carter Brown Library, at Providence, Rhode Island.

Of the many nineteenth-century explorers, Alfred Maudslay is far and away the most important. The results of his extensive explorations between 1881 and 1894 appear in five superbly published volumes containing a great number of magnificent photographs of stelæ and buildings, accurate drawings of hieroglyphic inscriptions, and many maps, plans, and sections. Together with the plaster casts of stone carvings which he brought back to the British Museum for duplication and distribution, his published work formed an incomparable basis for intensive research along many lines. Maudslay set a scientific approach which the twentieth century was to follow and amplify. Original Maya sculptures brought by him to England are now among the outstanding treasures in the British Museum (Plate 12).

Just before the turn of the century individual effort began to give way to the institutional. The Peabody Museum of Archaeology and Ethnology, Harvard University, led the way in 1892, and between that date and 1915 it sent a series of twenty expeditions to explore various parts of the Maya area. Many new sites were discovered, and much fresh information collected. The results—also published with exceptional photographs—added greatly to Maudslay's material.

Maya archaeology seems to attract colourful characters. Much of the exploratory work of these expeditions of Harvard University was done by a single man, Teobert Maler, German by birth but Austrian by naturalization, who came to Mexico in the train of that most pathetic figure in Mexican history, the Emperor Maximilian. After Maximilian's well-intentioned life was brought to a close by a firing-squad, Maler drifted to Central America, where he became interested in the Maya civilization. For years he travelled the forests of the Peten and out-of-the-way parts of

Yucatan, Campeche, and Quintana Roo, alone except for his native crews, who frequently decamped. He was indifferent to comfort, and would as soon start for the forest at the height of the rainy season as in the dry. He was a first-rate photographer and possessed a rare determination and patience in the face of difficulties, many, alas, of his own making. Later, Maler took it into his head that the Peabody Museum was making huge profits out of the sales of his reports (no archæological report in history has ever yielded a profit!) and refused to have anything more to do with the Museum.

Another strange character was Le Plongeon, who believed the Maya had come from Atlantis and that the Greek alphabet was a Maya hymn recounting the submergence of that mythical land. Some rootlets adhering to a sculptured lintel at Chichen Itza, where he worked for a long time, were interpreted by him as telegraph wires, and led him to declare that the Maya had a telegraphic system some 10,000 years ago by his dating. He also credited them with the invention of the metric system.

However, students of Maya civilization are not all crackpots; Förstemann, in Germany, did brilliant pioneering in the deciphering of the Maya codices, and Eduard Seler, another German, made contributions of outstanding importance. Alfred Tozzer, emeritus professor at Harvard, living for some time among the primitive Lacandon Maya, made the first ethnological studies in Central America. On his return to the United States, he directed the teaching of Middle American archæology at Harvard, where many of the present workers in that field studied under him.

In 1915, the Carnegie Institution of Washington entered the Maya field. Every year since then it has had anything up to a dozen men in the field studying every aspect of the culture. The programme has included large-scale excavation at three types of sites—Uaxactun, north of Tikal, a typical Peten city of the classic period; Chichen Itza, in Yucatan, where Mexican influences were very strong at a later date; and Kaminaljuyu, on the outskirts of Guatemala City, an important early centre of the highlands. The Institution is now working at Mayapan, capital of the Maya of Yucatan shortly before the Spanish Conquest. In recent years Mexican archæologists have taken the lead in field work in Chiapas, Campeche, and Yucatan.

Other research centres—University Museum of the University of Pennsylvania, the Middle American Research Institute of

Tulane University, the Instituto Nacional de Antropología e Historia of Mexico, the British Museum, and the Chicago Natural History Museum—have also contributed greatly to our present knowledge of the Maya. Expeditions of the British Museum worked for several seasons at Lubaantun and Pusilha in southern British Honduras. Research has turned from surface exploration to detailed excavation; from the general to the particular. As a result of this intensive work more has been learned and published about the Maya in the past twenty-five years than in the previous century and a half, with the result that research now tends to shift again from the particular to the general. So many have contributed to our present pool of knowledge that I



make no attempt in these pages to give credit for each piece of knowledge. The general reader can have little interest in knowing that this grave was excavated by Brown and that by Black, this temple cleared by Gray and that glyph deciphered by Green. The specialist knows to whom the credit belongs, and the general reader is hardly likely to be especially interested.

We should, however, give a line of credit to all gum chewers. To keep the chewer supplied, hundreds of *chicleros* spend every rainy season deep in the forests of Central America bleeding the sapodilla tree for its thick, milky sap, the chicle or raw material of chewing gum. Searching for new stands, they frequently come upon Maya ruins hidden in the forest. In the dry season the sap does not run, and the *chicleros* leave the forest for the small towns and villages on its perimeter, but that is the time when the archaeologist is busy (Maler was exceptional). *Chicleros* guide him to new

ruins and the chicle contractors' mules carry him there along the temporary trails used for bringing out the gum, which has been cooked to a bricklike consistency.

Synthetic gum is replacing the natural product, and the *chicleros* are pulling out of many parts of the forest, so their aid to archæology will soon be a thing of the past. Recent trails through the forest are now overgrown; tiny landing strips, recently shipping points for the gum, are reverting to forest. These outposts of our age are being submerged beneath the green tide, as were Maya cities 1,000 years ago. Not being built of substantial materials, they will completely disappear in a few years, perhaps foretelling in their extinction the fate of the fretted civilization which brought them into being. Indeed, since this book was written, the airfield at Tikal, mentioned at the beginning of this chapter, has been abandoned.

II. The Rise and Florescence of Maya City States

There is a kind of intellectual remoteness necessary for the comprehension of any great work in its full design and its true proportions; a close approach shews the smaller niceties, but the beauty of the whole is discerned no longer.—Samuel Johnson, *Preface to Shakespeare*.



POPULATING THE NEW WORLD

THE STUDY of archæology depends to no small degree on the examination of tens of thousands of potsherds, of stone implements, and of the diverse contents of trash heaps. This approach is essential for reconstructing the framework of history, but it makes dull reading for the average man.

Philip Guedalla, in one of his more *fin de siècle* passages inserted in the baroque façade of his *Conquistador*, gives archæologists fair warning of this. He writes: "One of the wildest hazards of history is that which dictates to posterity the particular feature by which it recalls a preceding age. Rome, by some accident, is almost all aqueducts in our recollection, Egypt all funerals. . . . Such chance survivals cause the oddest misconceptions, the most lopsided reconstructions of the past; and it is a shade disturbing to reflect that we shall lie one day, beyond all opportunity of contradiction, at the mercy of such hazards."

There is not a little danger that the fate of Maya archæology might be to emerge as an interminable catalogue of changes in the shapes and designs of pottery, or of minor evolution in types of masonry.

Sherds are essential for reconstructing trade routes and for establishing the contemporaneity of centres of civilization, and Job found them handy for scraping his boils, but to strive for the intellectual remoteness Samuel Johnson rightly advocates requires

that detailed discussion be eliminated from the text. With that end in view, specialized information of that nature is rigorously compressed here, or is omitted to leave the canvas free for a picture in broad outline.

Archæologists agree that America was populated by immigrants from Asia who crossed by the Bering Strait; there is less unanimity as to when the earliest crossings were made, majority opinion varying between 10,000 and 20,000 years ago. It is rather generally accepted that these were not large migrations, but infiltrations of small groups over thousands of years, which slowly populated the New World.

The whole problem of early man in America is extremely complex and is still far from being solved. One trouble is that archæologists, who think in decades and centuries, are in this matter largely dependent on geologists, in whose sight "a thousand ages . . . are but an evening gone". In any case, the matter is not of much consequence so far as Maya civilization is concerned, for there is no reason to believe that the Maya came over with those first Americans; their ancestors were probably late immigrants.

No specialist in the field supposes that America was populated by immigrants from across the Atlantic or from across the Pacific, although the possibility of late influences having reached the New World from Polynesia cannot be ruled out (it is even less likely that at any time voyagers from Peru or elsewhere in Latin America sailed to Polynesia).

The American Indian type is mixed, but Mongoloid features dominate, indicating rather clearly that the majority of the immigrants came from north-eastern and eastern Asia. There are, however, other strains. Ernest Hooton, of *Up from the Ape* fame, in describing a series of Maya skulls, remarks that they could be duplicated without difficulty in Pueblo crania from New Mexico or Arizona or from burials of coastal Peru. After noting that cranial deformation is found in the Near East and in the western parts of the New World, but is absent among Asiatics describable as Mongoloids, he continues: "I am inclined to think that the ancestors of the classical Mayas were not very different from the white hybridized type which we call Armenoid—hook noses from Henry Field's Iranian Plateau race, round heads from the good old Alpines—and inspired with similar æsthetic ambitions to improve their head form. Eventually they picked up some Mongoloid features—hair, pigmentation, [high] cheek bones, et cetera."

If Hooton is right—and there are few to challenge him in his field of physical anthropology—it is an exciting thought that the Maya were, so to speak, second cousins once removed to peoples such as the Sumerians, who were busy erecting pyramids, developing astronomy, and adapting and expanding a high civilization about 3,000 years before the Maya. Were those parallels fortuitous? Did the Maya and others of their race carry the seeds of such ideas with them when they crossed to the New World? Or can there be something in the Armenoid blood which inclines them to such interests? The trouble is that we have no real evidence as to what group originated such ideas in either hemisphere. The Egyptians may have done so in the Old World, but, for all we know to the contrary, the first pyramid-builders and astronomers of the New World may have been a long-headed group with no trace of hooked, beaky noses. About such speculation Hilaire Belloc once wrote some happy lines: "The student should be warned that they are theories, and theories only, that their whole point and value is that they are not susceptible to proof; that what makes them amusing and interesting is the certitude that one can go on having a good quarrel about them, and the inner faith that when one is tired of them one can drop them without regret. Older men know this, but young men often do not."

So far, no trace of early man has been found within the Maya area, but Barnum Brown found along the Pasion River a bone fragment, probably of an extinct sloth, with V-shaped cuts made in the living tissue. These, he believes, were man-made. However, at Tepexpan, on the outskirts of Mexico City, the skeleton of a man was found eight years ago under conditions which strongly indicate that he lived in Late Upper Pleistocene times (perhaps ten thousand years ago), although in appearance he did not differ much from many Indians of the present day. In 1952 the skeleton of a mammoth was excavated at nearby Iztapan, producing irrefutable evidence of association with man. A flint point was lodged between two ribs and other flint and obsidian implements were mixed with the bones.

If I were to express an opinion under the conditions Belloc describes—that is to say, I will not be held to it—and offer it as a suggestion for debate, I would assume that there was a non-Maya group of Indians, perhaps long-headed, thinly scattered over the Maya area, and perhaps rather more numerous in the highlands, from a quite early time; that the ancestors of the Maya in small

bands reached their final homes, together with other peoples of approximately the same physical make-up (round-headed and short), perhaps as late as 2000 B.C.—1000 B.C.; that sooner or later they imposed their rule on the natives of the region, forming an upper caste; that in the course of, say, the next 500 years the newcomers were reinforced by still more recent arrivals, all of whom entered America via the Bering Strait, so that finally the new race largely outnumbered the old people; that the new race brought with them from Asia such techniques as pottery-making, spinning, and weaving, a knowledge that their ancestors had practised agriculture, but without seed (lost on the long wanderings from Asia via Alaska); and that the last arrivals who may have left Siberia as late as the beginning of the Christian Era brought with them certain religious concepts which survive in eastern Asia to this day mixed with Hinduism and debased Buddhism. I have in mind such developments as the association of colours and celestial dragons with the four world quarters, ideas which I think are too complex and unnaturalistic to have been evolved independently in both Asia and America.

These views are not orthodox; the generally accepted opinion is that immigrants from the Old World brought a minimum of culture with them, and that practically all Old World inventions found also in the New World were duplicated independently in that hemisphere. On the other hand, some writers have maintained that there is no such thing as re-invention in the New World, but that all such duplications are due to diffusion from Asia. A stand between these extremes seems reasonable.

These later immigrants from the Old World may, as suggested, have brought with them the idea of agriculture, but they certainly did not bring with them the principal crops of Asia, for wheat, barley, rice, and the like were unknown in America before the Spaniards came. Nevertheless, two or three cultivated plants (cotton, the bottle gourd, and just possibly the sweet potato) occurred in both hemispheres before A.D. 1492, and this is an important matter because of its bearing on contacts between the Old World and the New. However, in the case of cotton there is some doubt whether Sea Island cotton, the American variety, is a native of the Eastern hemisphere. At any rate, the great majority of plants cultivated in America before A.D. 1492 were natives of the New World. So far as Central America is concerned, the most important of these were maize, beans, squashes, cotton, agave, and

maguëy. Botanists are about equally divided as to whether maize originated in South or Central America (there is also a view, rejected by almost all specialists in that field, that it is a native of south-eastern Asia), but whatever its centre of diffusion it was the basis of the civilization of the Maya and their neighbours in Central America and southern Mexico. Agave, which produces the modern henequen fibre, was extensively used by the Maya, as was maguëy in the Guatemalan highlands, for the production of fibre. Rope, carrying bags, and garments were made from some varieties, as well as a fermented drink like modern pulque.

BEGINNINGS OF CIVILIZATION IN MIDDLE AMERICA (THE FORMATIVE PERIOD)

The traveller of 2,000 years ago would not have noticed much difference in the way of life of Indian communities in the whole length of a walking tour from what is now Mexico City to what is now Guatemala City—he would have had to walk or be carried in a litter, for there was no beast of burden or other means of locomotion. (He might, perhaps, have sat in a sort of chair, resting against an Indian's back and supported by a tumpline passing across the Indian's forehead, but I suspect that was a refinement of travel introduced into Middle America in Spanish Colonial days.) I am assuming that the journey was by land. He might have made part of the journey by dugout canoe, following the Pacific Coast from Tehuantepec to the Guatemalan border, for that was a frequented route in Aztec times.

What would he have seen? Probably lots of forest once he got off the plateau, and every now and again a small clearing with a few huts in it. In some regions they would have been round and in others rectangular or oval, but all would have been thatched with grass or palm leaves. Inside, he would have seen a variety of articles, such as a grinding-stone and muller for the corn, vessels of pottery, gourd, and wood, simple frame-beds with mats resting on the slats, net bags holding maize, woven bags for beans, a fireplace, some little clay idols, a rolled-up loom with a half-finished textile, wooden planting-sticks, sticks and pieces of wood for drilling fire, round trays hanging from the roof, perhaps a notched pole serving as a ladder to reach the attic, containers for water and for lime (used in softening the hulls of corn before grinding), and perhaps two or three poncho-like garments used

as blankets at night and as cloaks in the early morning, but no spare clothes. Points of obsidian or flint, traps, spears, a dressed skin or two, bags of paint, a couple of dogs, and several children would about complete the picture. He would have noticed clearings near the huts sown to maize, squash, beans, and other crops.

A few miles farther on, the trail might skirt a "city", quite deserted as our traveller passes, for it is not market day and no important ceremony is to take place in the near future. There are fair-sized and sometimes quite large pyramidal mounds at these centres, but the tops support only altars or small thatched buildings. Thus the visitor would travel on, seeing over and over again those little settlements, an occasional village, a ceremonial centre,



fields of maize or cotton or agave or maguey, meeting hunters now and then or witnessing an occasional religious ceremony or passing through a market in full swing. At journey's end he would look back on what he had seen and realize the general monotony of the picture—just as gasoline ads or filling stations or soda counters from Maine to California are the same despite local differences in slogans and architecture.

Here the vessels might be largely of gourd or wood; there, of pottery. Some villages might use garments of maguey fibre; others (wealthier or near good cotton lands) might have a number of their most important citizens clad in cotton. Here the gods might have one set of names, and there another, but like Judy O'Grady and the Colonel's lady, they would be the same under their skins—the ubiquitous gods of crops and of rain. The pottery vessels might vary in shape and finish from one region to another, but essentially they would show the same mastery of the technique of pottery-making. Pyramids of this early horizon (the Formative Period) at Teotihuacan, or near Guatemala City, or at

distant Yaxuna, in Yucatan, show local differences, but they are essentially the same in concept. Had the traveller turned east at the start of his journey, followed the Gulf of Mexico southward, and then continued across the base of the Yucatan Peninsula as far as Honduras, he would have found that even the pottery was almost the same from Veracruz to western Honduras, and little pottery figures from altars of huts deep in the Peten were in many cases hardly distinguishable from those in huts in the shadow of Orizaba's peak. Everywhere, too, he would have found life geared to the changing aspects of the day gods who ruled in succession the 260-day almanac (p. 145), bringing weal and woe according to each one's nature, from one end of the land to the other.

This early horizon is far from archaic, for its surviving arts show considerable skill, and its architectural achievements, simple as they may appear in comparison with the florescence of Maya culture, show organized community effort almost surely directed by a hierarchy, albeit in the early stages of evolution from village medicine men.

Various names—Archaic, Middle Cultures, Formative—have been given to this early, pre-classic horizon. The last is my favourite, since it indicates that during that period the features which were to mark the rise of distinctive high cultures in the next period were in process of formation, a process of considerable duration. The slow growth of culture is well summarized by lines which John Masefield, in "The Everlasting Mercy", puts into the mouth of the parson:

*The social states of human kinds
Are made by multitudes of minds,
And after multitudes of years
A little human growth appears,*

and

*States are not made, nor patched; they grow,
Grow slow through centuries of pain,
And grow correctly in the main.*

The approximate dates, the outstanding features, and the designations (Formative, Classic, Mexican, and Mexican Absorption) into which Maya history is divided are given on pages 274-5 below.

The finest monument of the Formative Period in the lowland Maya area is a pyramid at Uaxactun, deep in the Peten and a few miles north of Tikal, which suffers the unromantic but strictly archæological designation E-VII sub, bestowed on it because it was found inside Pyramid VII of Group E. For, in accordance with a quite general Maya custom, this original structure had subsequently been covered entirely by a larger and higher pyramid, so that the inner and older one nested inside the outer, like the layers of an onion. When the badly damaged outer pyramid was removed, the inner one came to light in not far short of mint condition (Plate 5c).

The square pyramid is only twenty-seven feet high, but its impressiveness derives from the elaborate staircases with their subsidiary flights of steps, the eighteen huge masks flanking the staircases, and the complex arrangement of terraces supporting two platforms, one above the other. The effect is distinctly rococo, although, so far as we know, this is an incipient, not a decadent art. The grotesque masks, each about eight feet wide by six feet high, display a serenity which contrasts strangely with the restlessness of the pyramidal mass. The curled tusks at the corners of the mouths, the eyebrows with accented shagginess, the flat snouts, and the peculiar half-tongue, half-incisor pendent from the upper lip leave little doubt that the jaguar god is here displayed. The masks of the lowest zone, still more highly conventionalized, are modelled so as to give one the impression of staring straight at the muzzle of a being part snake, part jaguar.

The whole surface of the pyramid is covered with a thick layer of light cream stucco, dazzlingly bright, when first excavated, in the clear tropical sunlight. One of the most impressive and touching sights I have ever seen was this pyramid, then newly excavated, bathed in the light of a full moon. The towering of the uncut forest surrounding the little court in which it stood created a back-drop of black velvet for its brilliantly stuccoed mass. At a distance it lost its restlessness, and appeared to repose in the peacefulness of age. Few white men have seen or will see this pyramid in its pristine beauty, for with each rainy season and with the unchecked growth of vegetation more of its stuccoed surface disappears. It can be but a matter of a few years before it is reduced to a shapeless mass.

In the flat, stuccoed summit were four post-holes, forming a rectangle about sixteen feet by eleven, evidence that a temple of

perishable materials had once crowned the pyramids. Its size, that of an average room, would have permitted ceremonies requiring the presence of six or eight priests.

We know a certain amount about these people of the Formative Period at Uaxactun. Excavation has revealed the low platforms—about a foot high—on which their buildings stood. The larger ones are roughly rectangular, but the smaller ones are round or oval, sometimes with a rectangular projection in front so that in plan they resemble squat key-holes. In some cases post-holes in these platforms showed that huts of perishable materials had stood on them, and in one case two post-holes were set in rectangular projection in such a way as to suggest they held posts supporting the thatched roof of a veranda—the American porch has a respectable antiquity, but I hardly think the Maya had rocking-chairs. Strangely enough, squat, key-hole pyramids, in plan not unlike these platforms at Uaxactun, were being built at the time of the Spanish conquest in the area around Veracruz, then occupied by the Totonac, a non-Maya people. Maya huts are still built in Yucatan with four post-holes but with rounded ends, and round huts are shown on frescoes. Accordingly, it is reasonable to assume that the people of Uaxactun at this early time had rectangular huts for places of worship and smaller huts, circular or slightly oval, for their dwellings. Uaxactun is of importance partly because it is the most intensively excavated site of the lowland Maya, and partly because at Uaxactun is found the earliest dated Maya stela. Actually, Formative material turns up almost everywhere one digs. At Kaminaljuyu, in the suburbs of modern Guatemala City, very rich tombs of the Formative Period have been excavated. One of these contained some 300 pottery vessels, stone carvings, and other indications of a diverse culture.

Little pottery figurines, hand modelled with carefully made features, but with arms and legs treated impressionistically, show that ear ornaments, set in the lobes of the ears, and necklaces were used. Most of the figurines are naked, but some wear clothing, and not a few show deformation of the head in the typical Maya manner and typical Maya hooked noses. These figurines, which are of even earlier date, therefore tend to indicate that these early inhabitants of the Peten were in fact Maya.

Burials of the Formative Period at Uaxactun support this conclusion so far as they indicate Maya customs already established. Moreover, the only decently preserved skull was that of a very

broad-headed individual, and, as has been noted, the lowland Maya of Yucatan are among the most broad-headed in the world. The most remarkable burial was that of a skeleton from which the thigh-bones had been removed, although the shin-bones were crossed at the ankles in a peaceful and natural attitude. This, however, was not the only indignity this man had suffered. His skull had been sawed across so that all the facial bones had been removed and, minus these, had been neatly placed between the knees, as though to replace the missing thigh-bones. The right hand rested beneath the pelvis in a Pickwickian pose. As we shall see, the custom of removing the facial bones of a dead chief, and on them modelling in gum or some other plastic substance the deceased's features, was practised in Yucatan until the coming of the Spaniards.

Another instance of a definitely Maya custom already established at this time is supplied by a child's burial. The skeleton of an infant lay between two dishes, one inverted over the other, and with them was a finger-bone of an adult. The custom of burying the terminal finger-bone of the mother with her child was quite general among the Maya, and survived until the Spanish Conquest. In this particular burial the bone was not terminal, but the interment of any finger-bone of an adult with a child is sufficiently unusual to point to a continuity of custom, although in a slightly modified form.

All in all, one gets the impression that during the Formative Period the people of the Peten not only were Maya by race but were beginning to develop customs which were to carry into the developed Maya culture. Nevertheless, they probably differed but slightly in their daily lives from their non-Maya neighbours, for there were many seedlings in this cold frame of Middle American culture, and on the Maya plant, indistinguishable from all others, the first pair of leaves can have given no indication of the profuse and rare bloom which the summer of New World civilization would later bring forth.

Until a few years ago it was generally held by Maya scholars that the plant of Maya civilization grew alone in the garden of civilization, and that other civilizations, such as that of the Zapotecs of Oaxaca and that of Teotihuacan, the great ruined city near Mexico City, grew from seeds of the earlier Maya plant. More recent archæological work has shown that this is not the case, but that the Maya, Zapotec, Teotihuacan, and La Venta

cultures, and still others, blossomed at almost the same time. Indeed, some archæologists would place the La Venta culture, also called Olmec (the word means the rubber people), earlier than all the others. The subject is highly controversial, and a full discussion requires a detailed examination outside the scope of this book, but we must turn aside to present a thumb sketch of the evidence.

La Venta culture takes its name, somewhat unfortunately, from a site in western Tabasco, almost on the border of Veracruz, where sculptures in the distinctive style of that culture have been discovered by various expeditions, including those of the National Geographic Society under the leadership of Matthew Stirling. Sculpture in the same style occurs at other sites in southern Veracruz and, particularly in the form of easily portable objects of jade, is scattered over a wide area. In the carving of stone, particularly of jade, the people of La Venta culture had few equals. Typically, heads are of the so-called baby-face type or represent jaguars highly conventionalized, with human features substituted for those of the feline in varying degrees. All the sculptures at La Venta appear to be assignable to a period subsequent to the Formative, for all the pottery excavated at the site belongs to a horizon which corresponds to early Maya classic. At Tres Zapotes, an important La Venta site in Veracruz, part of a monument has an inscription which might record a date equalling 31 B.C. in our calendar. This reading, however, is open to question, and even were it correctly restored, there remains the possibility that the date is not coeval with the carving of the monument, for the Maya, at least, sometimes recorded on their monuments dates which were already far in the past. Again, the base from which the reckoning was made or the periods themselves may not have been those which the Maya used.

At the old Zapotec capital of Monte Alban, on the outskirts of the modern city of Oaxaca, monuments with glyphs are attributable to the local Formative horizon, and on the Pacific Coast of Guatemala, at El Baul, there is another monument which may carry a date within a few years of that at Tres Zapotes. There are still other stylistically early stelæ on the Pacific Coast, in areas which may never have been occupied by the Maya.

The situation, then, is that in the region west and south-west of the Maya area, extending to a little west of the narrowed part of the Isthmus of Tehuantepec, but with an outpost well to the

south-east, on the Pacific Coast of Guatemala there is some evidence of a development of the stela cult and dated hieroglyphic inscriptions some 350 years earlier than the earliest surely dated Maya inscription (the Leyden Plate, Fig. 20, page 255) which still survives. There is more than one art style involved, but none is Maya, although there are stylistic links between monuments of the Pacific Coast of Guatemala and the earliest dated stelæ of Maya cities of the Peten, and perhaps between La Venta treatment of the conventionalized jaguar mask and the stucco masks, to which reference has already been made, on the pyramid of the Formative Period at Uaxactun. Unfortunately, we have no information on early development in Maya lowland cities outside the Peten, although sculpture attributable to the Formative period has been found at Kaminaljuyu.



I have always felt that such an isolated region as the Peten would hardly have witnessed the beginnings of Maya civilization, which might rather be expected in parts of the Maya area where the stimulus of contact with other cultures should have quickened development—central Chiapas seems ideal, but so far has produced no very early monuments or evidence of an early cultural blossoming, perhaps because little excavation has been attempted there.

Nevertheless, the stucco masks at Uaxactun, which, surely antedating any surviving Maya stela, fall in the Formative Period, show that Maya civilization was developing its own characteristics even at that early stage, for those masks, although they have something in common with La Venta style, are definitely ancestral to Maya classic art.

In short, these various cultural centres of Middle America were developing alongside one another, and all had their roots in the Formative Period. On present evidence La Venta culture may have had a little more sun than the other cultural seedlings and so shot up more quickly, but it is well to remember that large areas of

Middle America are as yet untouched by the archæologist and that further excavation may reveal some other plant of still earlier growth.

It is worth bearing in mind that the area which has at present produced the longest succession of phases in the Formative is the area surrounding Guatemala City, where three phases, the last of great length and divided into four sub-phases, have been identified. This, however, is the very region where conditions are best suited for excavation on account of scanty vegetation; but, more important, because of a heavy concentration of population, excavations for new houses, roads, and pipes are continually bringing ancient remains to light. The bulldozer is not the archæologist's natural tool, although it does produce a lot of archæological material, mangled and undocumented though it may be. Should parts of Chiapas be subjected to a similar building boom, we might have evidence of a local development of sculpture in the Formative Period.

In short, we cannot yet say which culture had the honour of leading the way. In sporting terms, La Venta seems to have a short lead, but at the finish the order may be different. Indeed, I would not be surprised if the three leading contenders finish abreast, or a dark horse might yet be first at the winning-post, for there are huge areas in the Isthmus of Tehuantepec still archæological *terra incognita*. Concerning the people responsible for La Venta culture nothing is known. It has been suggested that they were the Olmec, "the rubber people", a shadowy group who occupied that general region, which seems to have been the principal centre of rubber production in ancient times. As the Maya-speaking Huastec were probably driven north from somewhere in that region to their present home around Tampico by invading groups, it is not impossible that the builders of La Venta culture were actually Maya. The fact that stelæ at the La Venta site of Cerro de las Mesas show Maya influences at two periods might strengthen this thesis, although one must bear in mind that art styles do not require supporting armies to cross racial frontiers—one would be far wrong if he deduced Chinese occupation of the United States or England to explain the distribution of willow-ware China, Chinese lanterns, and teapots.

THE CLASSIC PERIOD: BEGINNING

So far as the Maya area is concerned, careful work by archæologists of the Carnegie Institution of Washington has established that the three important features which really mark the birth of Maya culture in the lowlands—the carving of stelæ with Maya hieroglyphs, the building of stone temples with corbelled vaulting, and the introduction of polychrome pottery—reached Uaxactun at almost the same time. Their introduction there cannot be dated to the nearest decade, but we know that when the earliest surviving dated monument (Stela 9) was erected, these features had already come into use. This stela records in dreadfully eroded glyphs the equivalent in the Maya calendar (according to the most generally accepted correlation) of April 9, A.D. 328. It was still standing, although very much the worse for wear, when the late Maya scholar Sylvanus Morley found it in 1916, nearly 1,600 years after its erection.

Actually, we can push the development of hieroglyphic writing at Uaxactun further back toward the beginning of the Christian era. Stela 9 had before it an altar which was the reshaped lower half of another stela (No. 10). Unfortunately, the small glyphs on this surviving fragment are too weathered to be deciphered, and it is not possible to say whether it was placed as the altar of Stela 9 at the time of the latter's dedication. However, Tatiana Proskouriakoff, the outstanding student of Maya sculpture, believes it to be earlier than Stela 9 (she sees in some of the details analogies to those of early stelæ of the Pacific Coast), and so it is probable that Stela 10 was reshaped to serve as an altar at the time Stela 9 was dedicated. The Maya broke up and reused some monuments, whereas others, such as Stela 9, were left unharmed. Why some were destroyed and others left we do not know, but if a stela was in the way of some new construction, so that it would remain, let us say, half buried in a new platform or building, the decision to break it up may have been taken, and that is probably what happened to Stela 10. There is, accordingly, a good chance that this monument carried the stela record at Uaxactun further back toward the beginning of the Christian Era.

When precisely does a puppy become a dog, or a kitten a cat? When did Maya civilization earn the right to be credited with an individual personality? Naturally, in such cases of slow growth one cannot define the moment. Some would say that the presence

of distinctive Maya glyphs on these monuments plus the use of the corbelled vault marks that attainment; others might equally well argue that until the original art style of the Maya had developed, one could not speak of Maya culture. As William Browne wrote nearly 350 years ago:

*Where none can say, though be it strict attends,
Here one begins, and there the other ends.*

On the strength of architecture and hieroglyphs, Maya civilization was well under way by the middle of the fourth century, but it was not until the fifth century was well advanced that Maya sculpture had developed fully its own style.

Before A.D. 450 the custom of erecting dated monuments was, so far as present evidence indicates, confined to half a dozen sites clustered within an area of less than 200 square miles in the forest land of northern Peten. By the end of the century the custom had spread northward to Oxkintok, in distant Yucatan, and south-eastward to Copan, over the border into modern Honduras, and had effected a lodgment in the Upper Usumacinta River at Altar de Sacrificios. It may also have penetrated to Veracruz, thereby accounting for the Maya-influenced stelæ at Cerro de las Mesas, although, as we have seen, the custom of dating monuments may go back considerably earlier in that region.

One must not get the impression that the spread of this custom was carried by immigrants, any more than one should suppose that bands of colonists from New York carried the custom of erecting skyscrapers to Chicago, St. Louis, Dallas, and Minneapolis. Maya had surely been living in Copan and Oxkintok long before they started carving stelæ or erecting vaulted buildings. These were manifestations of a spreading cult, just as mosques and Arabic script mark the spread of Islam.

Half a century later—that is, by A.D. 550—the dated-monument cult had invaded the middle Usumacinta Valley, establishing itself at the great Maya cities of Yaxchilan and Piedras Negras, and had been accepted at Calakmul, in southern Campeche. By the end of the sixth century the cities of Tulum and Ichpaahtun, on the east coast of Yucatan, Lacanha and others in the Chiapas forests south of the Usumacinta, and Pusilha, in British Honduras, were erecting stelæ. The custom was spreading in all directions, just as the erection of skyscrapers did thirteen centuries later, but the absence of

the stela cult did not mean that a city was not Maya, any more than that a city in the United States without a skyscraper is not American.

Stelæ bear witness to the incredible preoccupation with the mysteries of time which so profoundly affected Maya culture (pp. 144-51). Priest-astronomers recorded on these stone shafts their progress in astronomy and mathematics; the best artists were employed in carving on them representations of their gods; and for them were reserved the most important positions before pyramid or palace (Plates 3, 5).

About this time there is some evidence of lessening activity. Some cities which had already embraced the stela cult erected no more monuments for a time. Tikal and Uaxactun, which had been foremost in the practice in the fourth century, seem to have ceased to erect stelæ. At least, no carved stelæ attributable to this period have been found (there are many uncarved stelæ which once may have been stuccoed and painted, but there is no evidence that these were erected during this less active period).

THE CLASSIC PERIOD: FLORESCENCE

Around A.D. 650 there was another and far greater wave of activity which with gathering force and momentum rolled forward, only to break against the rocks of dissolution on the far shore of the Classic Period 250 years later.

The cause of the quiescence before this renewed activity is unknown, but it is significant that at its close Maya art and architecture had undergone notable changes. Pottery shapes alter abruptly, and so do the designs on them. The principal figures on stelæ, which had usually been carved in profile, with the rear foot partly obscuring the front one, are now generally shown with bodies in full view and with feet turned out, although the head may be in profile and the shoulders slightly turned. The disappearance of archaic details is accelerated, and one gets the impression of an emancipation from awkwardness into what would soon be the florescence of Maya sculpture. In masonry there was a shift from large, unfaced stones deeply tailed into the concrete hearting of walls to faced and well-cut stone applied as a veneer to the hearting, a more elegant but less stable treatment. These changes seem to have been roughly contemporaneous, but they did not appear everywhere at the same time.



a



b

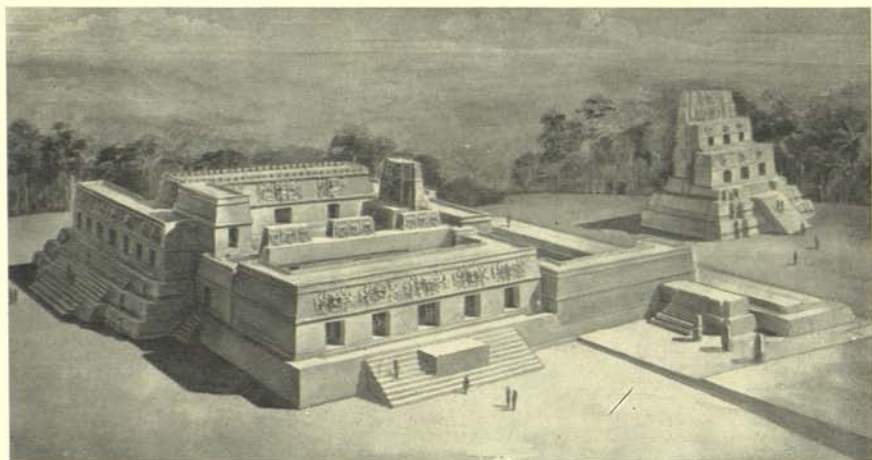


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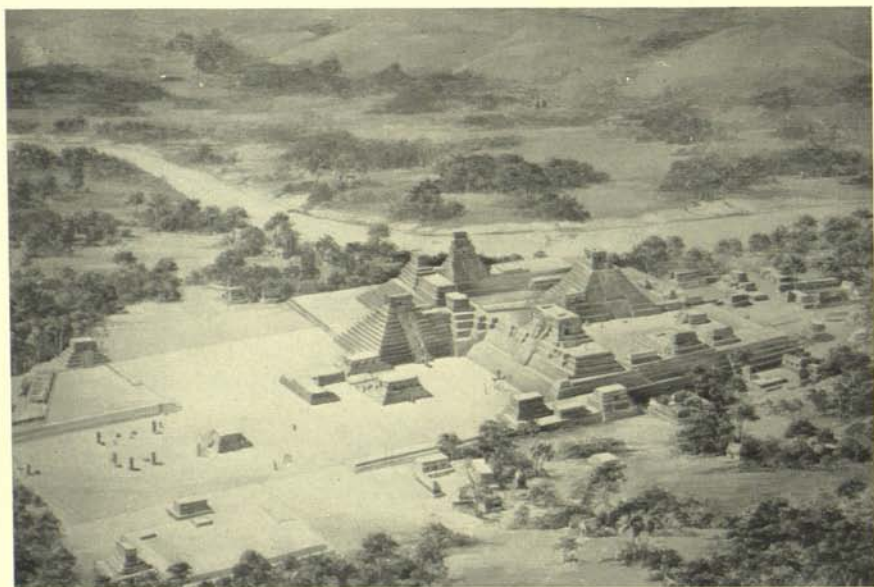


d

a: Tzotzil, Chiapas. (Photograph by Giles G. Healey.) *b*: Lacandon man. (Photograph by Giles G. Healey.) *c*: Chol. (Courtesy Middle American Research Institute, Tulane University.) *d*: Yucatec woman.

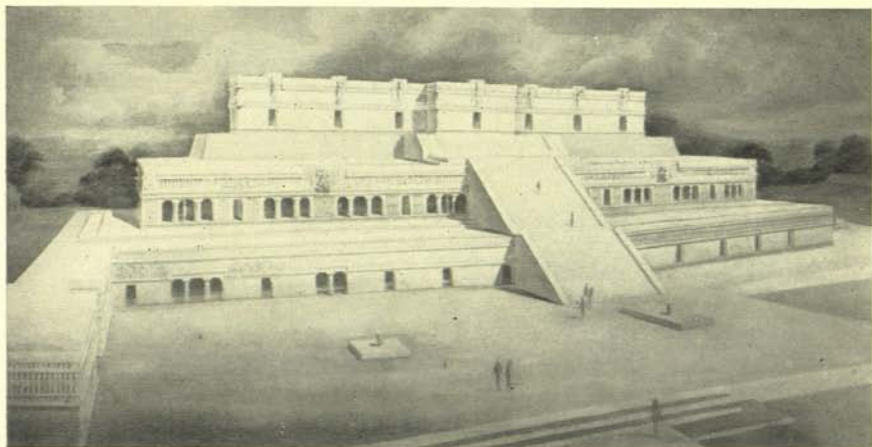


a

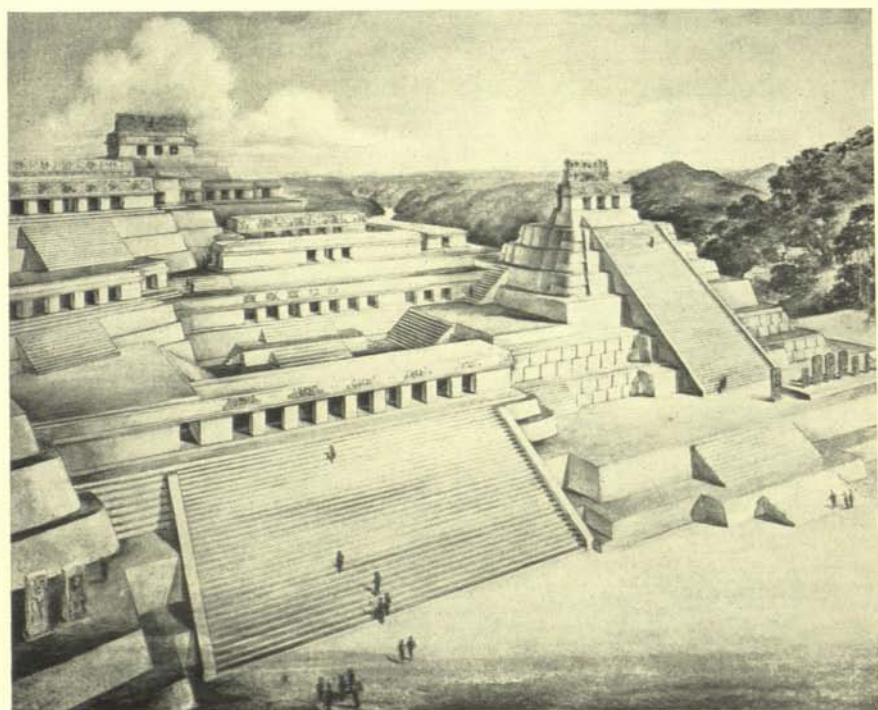


b

a: A part of Uaxactun with the "palace" in foreground in its final form. b: Copan. The great court with stelæ in left foreground. Centre foreground, the ball court with hieroglyphic stairway. Copan River in background. (These, like all the restorations drawn by Miss Tatiana Proskouriakoff, accurately incorporate all archaeological data. Guesswork is minimal.)

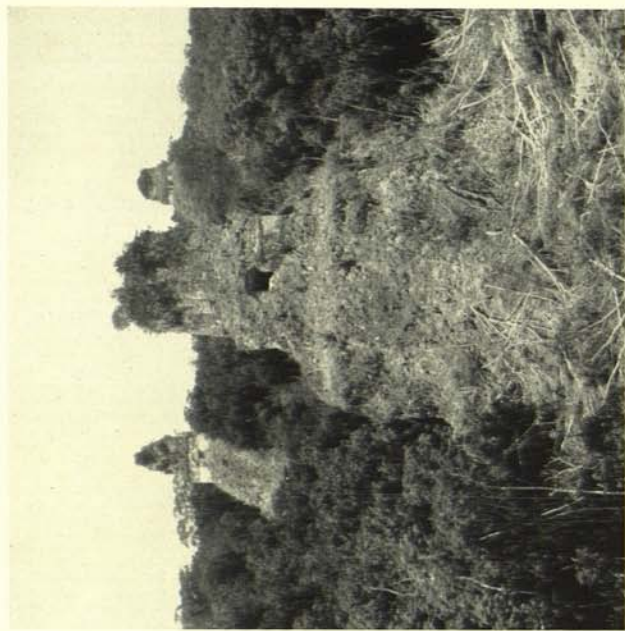
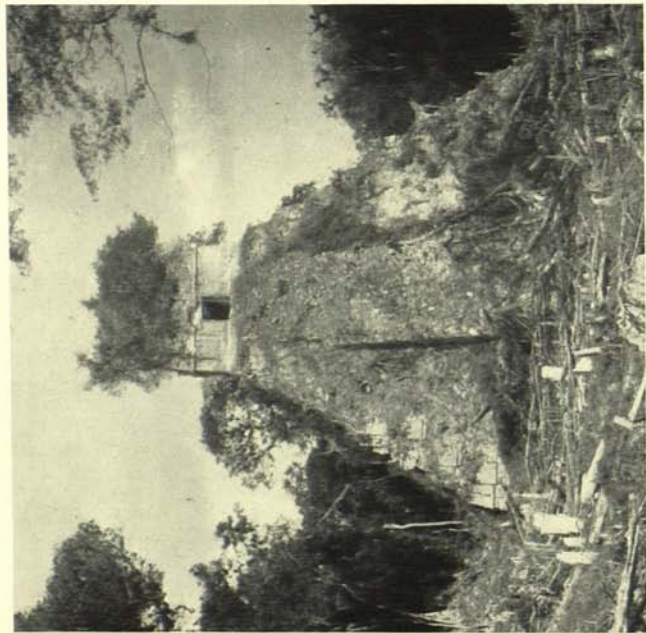


a



b

a: The "palace" at Sayil, Yucatan. Puuc style of about A.D. 850. Much of the original is well preserved. b: A part of Piedras Negras at its peak, about A.D. 800. Note line of stelæ. (Courtesy University Museum, Philadelphia.) (Drawings by Tatiana Proskouriakoff.)



a: Temple on east side of great court, height about 158 feet. Note stumps of smashed stelæ on left. *b*: Temple on west side of great court, height about 145 feet, with two other temples in background rising above treetops. (Courtesy British Museum and Peabody Museum, Harvard University.)

PLATE 4.—Pyramids and Temples, Tikal.



a



b



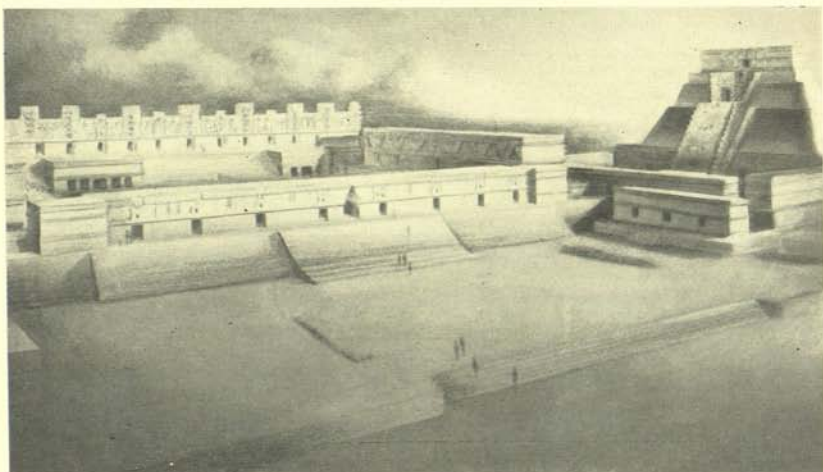
c

a: El Castillo, Chichen Itza, the so-called Temple of Kukulcan. Early Mexican Period, about A.D. 1000. *b:* Temple of the Inscriptions, Palenque, A.D. 692. Inside is the secret stairway leading to the burial chamber beneath the centre. *c:* Pyramid E-VII sub, Uaxactun. This stuccoed pyramid is of the Formative Period, about A.D. 325. Note stela in front of main stairway. A later pyramid which encased this one was removed, revealing the earlier building in almost mint condition.

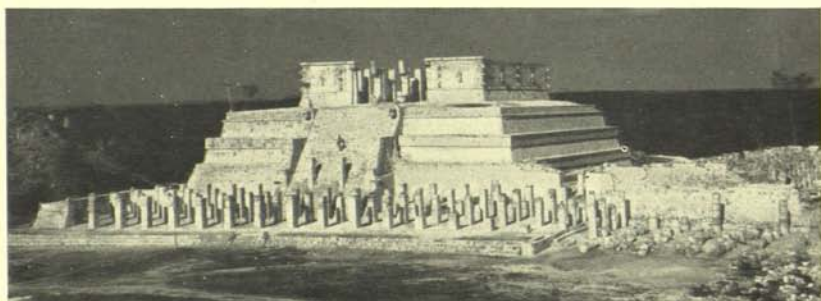
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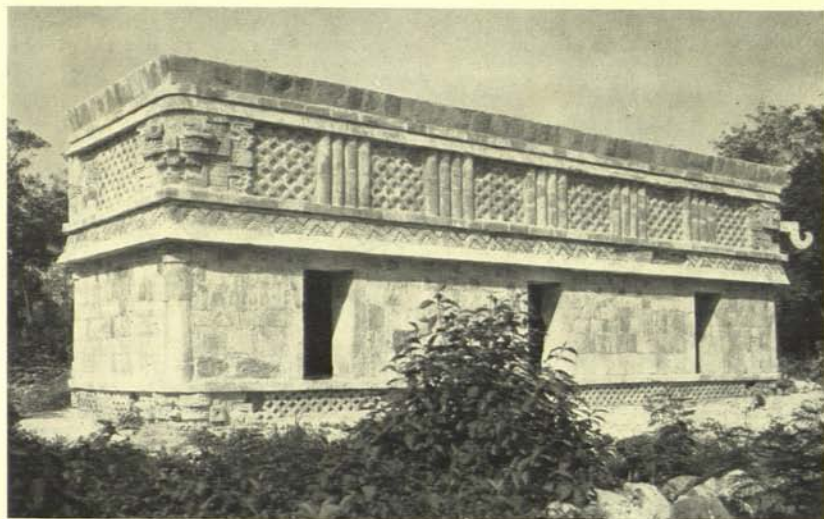
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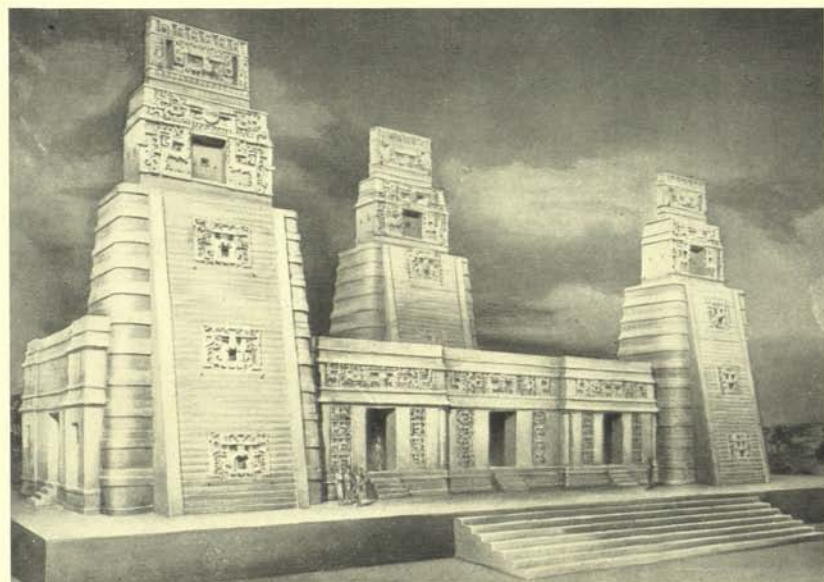
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a: The ball court, Copan, as it is now. Note central playing alley with three markers, the sloping sides, and the temples on each side. b: The "nunnery" quadrangle and the Temple of the Adivino, Uxmal, about A.D. 900. (*Drawing by Tatiana Proskouriakoff.*) c: Temple of the Warriors, Chichen Itza, after excavation; colonnade in front. Typical architecture of the Mexican Period, about A.D. 1150.

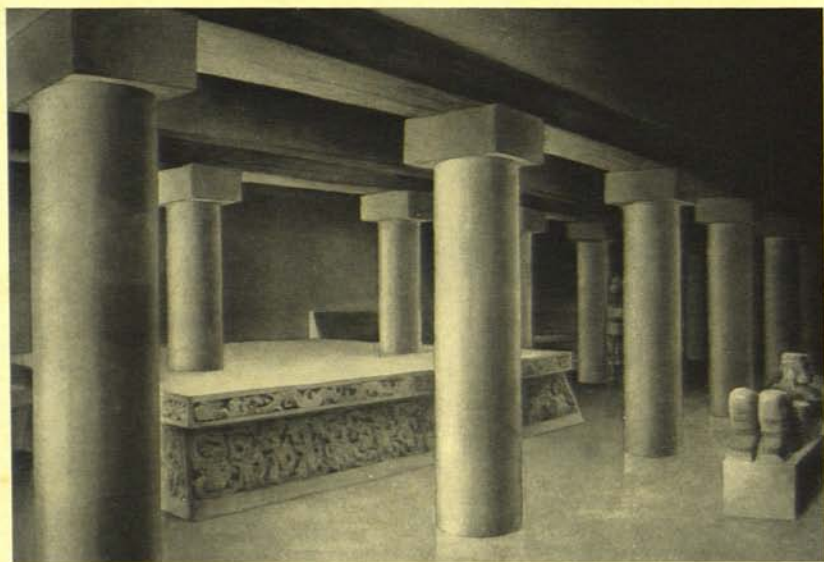


a



b

a: Temple of Three Lintels, Chichen Itza, a pre-Mexican building of the Classic Period, about A.D. 875. The lattice pattern represents the markings on the bodies of snake monsters; the corner masks represent the heads. b: Temple at Xpuhil, Quintana Roo, in Rio Bec style, about A.D. 875. The towers take the form of miniature temple-topped pyramids, but the steps are too narrow to climb and the temples, with their roof combs, are dummies. (Drawing by Tatiana Proskotriakoff.)



a: Gateway of quadrangle of the "nunnery", Uxmal, looking out (cf. Plate 6*b*). Note tenoning of vault stones and line of capstones. (Courtesy Middle American Research Institute, Tulane University.) *b*: Interior of a room of the "nunnery", Uxmal, about A.D. 900. *c*: North colonnade, Chichen Itza, showing how wide rooms were attained in the Mexican Period by resting the vaults on wooden beams supported by columns. Note dais or altar and the reclining figure of the kind called Chacmol, a Mexican deity. About A.D. 1150. (Drawing by Tatiana Proskouriakoff.)

One may wonder whether such innovations reflect any change of direction in Maya life, perhaps due to external pressure of ideas or even people. The archæologist, of course, is constantly on the look-out for outside influences, but for that very reason he runs the risk of exaggerating their importance and their effects. In fifteenth-century England the florescence of Perpendicular Gothic produced such novelties as immense windows, fan vaulting, and, of course, a replacement by vertical and horizontal axes of curvilinear patterns not only in architecture but in all ecclesiastical furniture. Yet we know that these profound changes were not due to any extraneous influences, political or cultural. Accordingly, it would be wise, in our present state of knowledge, to abstain from theorizing on the cause of these Maya developments.

Once Maya culture got into its stride again, development was



rapid. City after city adopted the stela cult, and the cities vied with one another in erecting temple-topped pyramids and "palaces" and in beautifying buildings and monuments with sculpture and modelled stucco. Hieroglyphic inscriptions have been found at no less than ninety sites. In some ceremonial centres only one inscription has been discovered, whereas at others inscriptions are plentiful. Calakmul, with no less than 103 stelæ, of which thirty are plain or too weathered to show traces of carving, leads all cities in that field (Plate 10c). Tikal comes second with eighty-six stelæ, but of those no less than sixty-five are plain. In addition, Tikal has a number of texts sculptured on altars and wooden lintels. Palenque, Copan, Yaxchilan, and Piedras Negras inscribed lengthy texts, but in many cases they occur not on stelæ, but in connection with buildings—carved on steps, lintels, door jambs, or panels (Plates 9-15). These numerous inscriptions, taken in conjunction with the huge building programmes, indicate the

tremendous activity that marked the Classic Period throughout the lowlands.

Although the stela cult never found favour in the Guatemalan highlands, there is full evidence that the same building boom affected that region, but at an earlier date. In fact, some highland cities, notably Kaminaljuyu, as well as such non-Maya centres as Teotihuacan, La Venta, and apparently Monte Alban, had passed their peaks and were in decline when the lowland Maya were riding on the crest of productivity.

What was a Maya city, and how did it function? First, as I have already said, it was not a city at all in our sense of the word, because it was a ceremonial, not an urban, centre, to which the people repaired for religious ceremonies, civic functions, and markets. The stone buildings were quite unsuited for permanent habitation; they had no chimneys and no windows, although some rooms had small vents in the walls. Moreover, they were damp and ill lit. So much was this so that *chicleros* often fail to distinguish between natural caves and partly collapsed Maya buildings, using the same word to describe both, and the Maya word *actum* means both a cave and a stone house.

Inner rooms, illuminated only by the light filtering through a narrow doorway from an outer room, are almost completely without light, and there are many cases where the light has to pass through two rooms to reach the innermost, and at that, the doorways may not be in line (Fig. 4, page 67). In such inner rooms, unless the sun is low and shining through the outer doorway, one cannot see his hand in front of his face. They can never have been inhabited; they can only have been used for storage of paraphernalia or perhaps for secret rites. As each deity or group of related deities had its own insignia, much room would have been needed to store them.

Even the outer rooms would have made poor residences. The absence of chimneys and windows meant that no cooking could be done indoors, and the rooms, beside being dark, were damp. The walls ooze water now in the rainy season, in large part because of damage to roofs from roots, but excavation of buried buildings undamaged by roots reveals the same conditions. Indeed, with cross-ventilation often lacking or poorly developed, one could hardly expect such rooms to be anything but clammy in the rainy season. Finally, in many rooms huge daises or platforms occupy most of the space, so that the actual

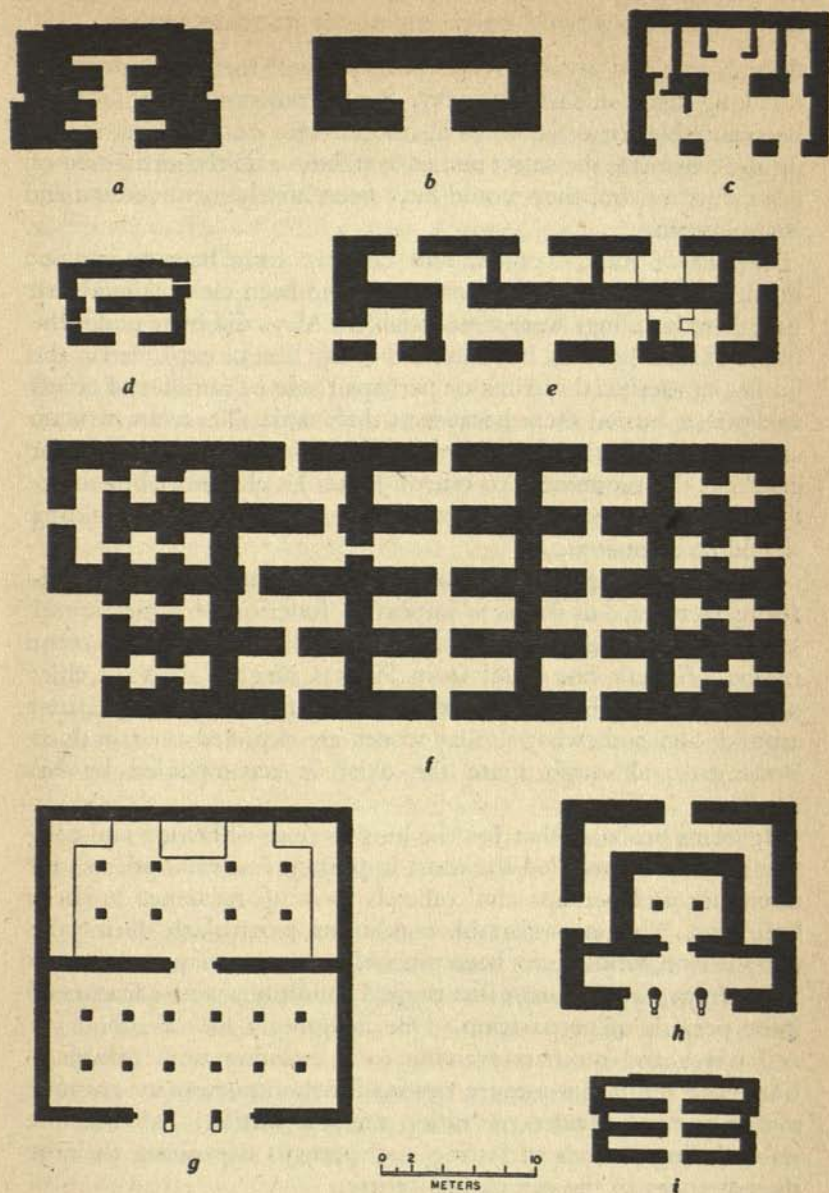


FIG. 4.—Plans of Buildings, from the Simple to the Complex.

Note proportion of masonry to floor space in *a*, and how little light reached the inner rooms of *f*. All are Classic except *b*, transitional to the Mexican Period, and *g*, typically Mexican Chichen Itza with columns permitting much wider rooms. *a*, Temple 1, Tikal; *b*, Nakum; *c*, Temple of the Cross, Palenque; *d*, Uaxactun; *e*, San José; *f*, Tikal; *g*, Temple of the Warriors, Chichen Itza; *h*, Castillo, Chichen Itza; *i*, Naachtun.

floor is confined to a small area perhaps three feet wide and eight feet long just inside the doorway. Such arrangements might have been suitable for ceremonies in honour of a god or chief seated on the platform, the select audience standing on the small area of floor in front, but they would have been highly inconvenient for housekeeping.

Burials of men, women, and children have been found beneath the floors of such rooms, and have been cited as evidence that these buildings were residential (the Maya did bury under the floors of their houses), but I think they can best be explained as the bodies of sacrificial victims or perhaps those of families of chiefs and priests buried there because of their rank. There are women and children buried in Westminster Abbey (even an alabaster cradle as the monument to one of James I's children), but to deduce therefrom that Westminster Abbey was a residential building would be erroneous.

Actually, we have good grounds for believing that these platforms were used as daises at important functions, for they surely served in the same way as regular daises which are found in some rooms. A very fine lintel from Piedras Negras shows a chief seated on an elaborate dais with various functionaries gathered around, and somewhat similar scenes are depicted on murals at Bonampak, although there the chief is accompanied by his family.

It seems probable that for the long periods of fasting and continence which preceded the most important festivals, priests and novitiates and perhaps civil officials took up residence in these buildings. The uncomfortable conditions, particularly during the rainy season, would have been precisely what was required, for we know from Aztec sources that rugged conditions were a feature of these periods of preparation. One imagines a file of attendants and wives and mothers arriving each morning with drinking-water and the rather meagre rations for the inmates (we are told that in parts of Mexico the ration was one tortilla! Salt was not eaten during periods of fasting) and perhaps depositing them at the entrances to the ceremonial centre.

The time would pass, slowly no doubt, in long vigils, attending the sacred fires, drawing blood from tongues and ears for offerings to the gods, and burning much copal incense in grotesquely decorated incense-burners. The market held every five days might have given a little interest to life, but surely it had to be watched

from afar, for there could be no mingling with women during these periods of preparation.

Then would come the big celebration, and at its conclusion a general exodus from temple and palace back to everyday life. The city would lie deserted except for those who swept the courts and buildings or stored the masks and vestments, and for priests on tour of duty. Then at the next market day the city would come alive again. Buyers and sellers, their business done, would come to gaze and make their offerings at humbler shrines; persons of rank, borne in litters, would worship secludedly at the great shrines or gather for a council of state; a game of ball would be going on with many onlookers crowding to see the play; and perhaps dancers decked in fantastic masks would weave their patterns on some sunlit court to the sound of drum and flute.

This picture is not just an attempt to explain archæological evidence; it agrees with what some Maya communities do to this very day in the highlands of Guatemala. In places the present-day Maya live in scattered settlements covering a wide area, where they have their cornfields and where they carry on their normal activities, but they also have their town houses, to which they repair for important religious functions, Roman Catholic, pagan, and mixtures of the two, and for such civic events as the installation of new communal officers and markets. The modern town, in fact, functions very much as we have supposed the old Maya cities did, save that family houses now invade the centre. Between ceremonies the town is largely vacant, as we suppose it to have been in ancient times.

The religious ceremonies have changed; some products now sold in the market may come from New Jersey or Ohio; Dorothy Lamour may be advertised at the local movie house; and marimba music may be blaring from a loud-speaker at the corner of the square. Yet essentially nothing has changed. The continuity of life is one blessed thing archæology demonstrates.

Modern Maya towns and ancient Maya centres have another feature in common: they are undefended. Here, however, there is not continuity, for in the period of unrest which followed the end of the Classic Period Maya cities were surrounded with defences or were moved to easily defended positions on hilltops or islands or peninsulas of land guarded by deep ravines. The ceremonial centres of the Classic Period occupy open sites with no walls or bastions.

One can no more speak of a typical Maya city than one can speak of a typical European city, for there are marked local differences within the Maya area just as there are in Europe. However, all Maya sites have certain features in common, of which the ceremonial court, flanked on all sides by terraces, platforms, pyramids, and temples, and often studded with stelæ, was the most important. It vaguely recalls the modern stadium with its stands, both in plan and function, bearing in mind that the court is rectangular, and the spectacles staged in it were primarily religious (Plate 2, 3).

It is only a surmise that the crowds at times sat on the stairways and terraces of pyramids and flanking platforms to watch spectacles in the great court. Two years ago, on the occasion of an archaeological conference in Mexico, the Government of Veracruz staged native dances and the spectacular *Volador* ceremony in the great court of Tajin, and nearly all of us automatically seated ourselves on the steps and terraces of the great pyramid to view the spectacle, so unless there was a religious prohibition, one can be fairly sure that a Maya audience acted as we did. There is more than a hint that the Aztec did the same.

A description of the great court of Tikal and its surrounding buildings, of which we had a glimpse at the beginning of the previous chapter, will serve to give a general idea of all such centres. It is nearly 400 feet east to west, and some 250 feet north to south (Fig. 1, page 17). To east and west the court is bounded by two huge temple-crowned pyramids. In the introductory tour we entered the court at its south-east corner and later climbed the eastern pyramid. The pyramid on the west side of the court is quite similar. A wide staircase, now badly ruined, but once with every step plastered, leads to the summit on which stands another massive temple, and above soars its huge roof crest. A single doorway, through which three, but not four, men could enter abreast, leads to a transversal room sixteen feet long but less than four feet wide. Another broad doorway and a step lead to an inner room parallel to the first and of about the same dimensions. A third doorway leads to the back room, also parallel to the others, but not so long, and lighted only by the light entering through the outer doorway (Fig. 4a, page 67).

It seems almost incredible that the Maya should have raised this enormous pyramid and built on it the massive temple with its soaring roof crest to hold three small rooms so narrow that,

spirited to London, they could not be passed off as kitchenettes by the most persuasive estate agent showing them to the least critical tenant. A very rough estimate of the area of the pyramid and stairway alone indicates a volume of about half a million cubic feet of rubble and masonry to support three rooms which have a combined floor space of less than 150 square feet. If one calculates the cubic area of these rooms in relation to the whole bulk of the temple with its massive walls and towering roof crest, the proportions are equally fantastic.

These minute rooms are depressing after the superb grandeur of the terraced mass of the pyramid and the soaring beauty of the exterior of the temple with its lofty roof comb, and they are not typical of Maya architecture. The explanation probably lies in the architect's lack of boldness. He was, one can imagine, not sufficiently sure of himself to erect rooms with thinner walls and consequent increased floor space in view of the tremendous weight of the roof crest which they must support. The collapse of some earlier building with narrow walls may have led to a cautious approach, particularly if, as is not improbable, the collapse of a building might bring the chief architect to the sacrificial block (we know of a drummer sacrificed because he did not keep proper time in beating his drum).

The north side of the ceremonial court is bounded by a large platform on which are four smaller temple-capped pyramids. Behind, to the north of these, the platform rises again to form a small ceremonial court surrounded by five more smallish pyramids, each with its temple towering as high as those of the first tier, or higher. A fantastic sight it must have been to an observer standing in the centre of the great court and facing north. On each side of him was a huge pyramid with its temple and soaring roof crest rising like a volcano; before him stood rows of stelæ and then that sort of Kremlin with its nine smaller temple-crowned pyramids. Everywhere his gaze would have fallen on acre upon acre of stuccoed surface, like creamy icing over writhing masks of gods on façades and roof crests and smoothly spread on geometric equilibrium of stair and terrace—dynamic and static in silent conflict. His eye would have been caught by doorways of temples, black in shadow or with a gay textile drawn across the gaping mouth.

Behind him, to the south, was another acropolis or second Kremlin, the base of which stands higher than that to the north,

for it rises some eighty feet above the level of the court. On it stood nearly a score of buildings of the "palace" type, in contrast to the small temple-topped pyramids of the northern Kremlin. It was in the southernmost of these that I had slept and where several of the rooms are covered with incised scribblings made, I like to think, in moments of boredom by young candidates for the Tikal priesthood.

South of that is a deep ravine, on the far edge of which stands another mighty pyramid with temple on top, and just west of it yet another acropolis-like platform, about 125 feet high, supporting still more buildings. It would be tedious to continue the enumeration of pyramids, platforms, temples, and palaces. Those we have noted are those an observer would have around him as he stood in the great plaza, just as an observer standing at the junction of Broadway and Forty-second Street in New York would see the soaring buildings around him, but would not see those more distant, hidden by the ones nearer to him.

Not all the buildings in a Maya city were of stone. Many platforms and some pyramids, which now have no ruins on their flat summits, once supported buildings with walls of perishable materials and roofs of thatch, and some buildings with stone or rubble walls had flat wood and concrete ceilings or thatched roofs. Huts may have served as clubhouses for the unmarried men, for we know that such buildings existed in Yucatan at the time of the Conquest. Other huts may have been set aside for unmarried girls of noble blood, the Maya equivalent of Rome's Vestal Virgins, who had certain duties, such as sweeping the courts and weaving the elaborate textiles required in religious ceremonies, and who took part in sundry religious observances.

In addition to the types of structures already described, there were various others with specialized functions. Most important of these was the court in which the sacred ball game was played (Plate 6a). The Aztec had special buildings for markets, and it is probable that these occur in Maya cities, although none has yet been surely identified.

At some ruins, but not at Tikal, elaborate sweathouses have been found. These are provided with a small sweat room, complete with steam-generating apparatus, and a cooling-off room. Many cities have reservoirs, the floors of which are lined with stone or cement. Complex systems of stone-lined drains to carry off water from enclosed sunken courts have been uncovered, and

excavation would probably show that they existed everywhere. At Palenque a stream which meandered through the city was diverted to flow through an underground aqueduct with corbelled vault. Parts of this have now collapsed, but through untouched sections four or five men can march abreast. Drains from the acropolis almost certainly discharged into this aqueduct water from courts and roofs. Lower down, where the stream has emerged from its man-made confinement, it is spanned by a vaulted bridge. At Pusilha, in southern British Honduras, the stone abutments of a large bridge are to be seen on opposite banks of the river.

Palenque also possesses three underground corbelled passages, which lead from a low-lying building on the north edge of the palace acropolis. The most important, some sixty-five feet in length, ends in a flight of stairs which leads through a hole in the floor to a room in the centre of the palace building. When not in use, this exit was covered with stone slabs flush with the floor of the room. The other two passages emerge similarly through the floors of the buildings of this palace. Each passage has a jog in it, obviously made for some deliberate purpose of mystification or secrecy, or to shut out light, for not a ray of light reaches the extremities.

One can surmise that these passages might have been used for a little religious hocus-pocus. For instance, there was an extremely important Aztec ceremony in which the gods, who had been absent for some months, were believed to return, the sign of their arrival being a footprint in maize flour sprinkled before the temple. Supposing an analogous ceremony among the Maya, the main buildings of the palace could be inspected by important laymen and seem to be quite empty. Then, entering through the secret passage, the priest who impersonated the god could miraculously emerge from the building, or, unseen, could leave his footprint in the corn flour. These subterranean passages could also have been used in ceremonies connected with the underworlds. The latter explanation is, perhaps, more logical, since there are finely carved decorations within the passages, which would be superfluous in secret passages. Whether they are a remnant of Spanish folklore or not, Central America is riddled with stories of secret tunnels connecting one group of ruins with another, and it is possible that underground passages, such as these, might have given rise to such stories. It has also been suggested that these

passages were for defence—a means of taking attackers in the rear, a view which I find hard to accept.

Palenque also boasts a square tower, three stories high, with an interior staircase, each story being roofed, not with the usual corbelled vault, but with a ceiling of wooden beams.

In the later cities of Chichen Itza and Mayapan there are round buildings said to be connected with the worship of Kukulcan, the feathered serpent god.

Several cities in Yucatan have elaborate gateways, often of imposing size, but none has been found so far in the Central area. They could only have served some ceremonial purpose, for the Maya had no wheeled traffic or beasts of burden. Broad roads connect the different sections of certain cities, notably Tikal, Uaxactun, and Oxkintok, and in north-eastern Quintana Roo there is an elaborate network of roads, one of which, slightly over thirty feet wide, links the city of Coba with Yaxuma, a distance of sixty-two miles. Other roads connect Ake and Izamal, and Uxmal and Nohpat. An early writer mentions long roads in Chiapas and south-eastern Peten.

On the outskirts of most Maya ceremonial centres small low mounds are to be found in considerable numbers. These presumably supported the houses of members of the nobility and priesthood, but since they were constructed largely of perishable materials, there remains little evidence of their original forms. Many, however, had stone foundations for their walls, and usually the floors are of a cement-like consistency which has defied the centuries, and these details help in identifying their original forms. Although ground plans show considerable variation, these ancient houses probably differed little in roof construction from those made by the present-day Maya of Yucatan (Fig. 18, page 233).

The silhouette of a Maya ceremonial centre was strangely like that of a modern American city. In the centre, corresponding to massed skyscrapers with their setbacks to permit light to penetrate to the street level, were the terraced pyramids around the central court. The series of outer rings of structures gradually decreasing in height, with an occasional area of loftier construction, can be equated with the less important business districts of a modern city. Finally, the outer ring of a Maya city, consisting of the thatch-roofed residences of the priests and members of the nobility, correspond to the suburbs of the American city. The superficial resemblance is even greater if the comparison be made

with a city situated on the shores of a lake or river, such as Chicago, Cleveland, or St. Louis, for many Maya cities are built on the shores of lakes or rivers. In many instances what were once in all probability lakes are now silted, and, as in the case of the great depression east of Tikal, have been converted into swamp.

There is, however, one noticeable difference: the Maya nobility almost surely resided on the outskirts of the city, and the peasant and working population lived farther away in small scattered settlements, whereas in America it is the successful businessman who has the distant and sequestered residence. Only on the North Atlantic seaboard and in the area around the Great Lakes would one find cities and towns as concentrated as the ruined cities of the Central area.

To a person not familiar with mediæval architecture, Gothic cathedrals might seem on first inspection very much alike, but closer study will reveal a bewildering amount of local variation in minor details which serves to counteract the lack of deviation in major aspects from a pattern imposed on the builders by tradition, function, and the laws of stress and gravity. The same is true of Maya ceremonial centres. There is an amazing uniformity in essential features from one end of the Central area to the other, but familiarity with the material brings cognizance of the many local divergences and reveals much charming individuality.

Tikal, in its crowded buildings and soaring pyramids, and even in its sculptural art, has the nervous restlessness of a Tchaikovsky symphony, whereas at Palenque, far to the west, the rhythm of architecture and art flows more peacefully. The restful lines of its stone-sculptured and stuccoed bas-reliefs (Plates 13, 15, 16; Fig. 14, page 181; Fig. 16, page 207) and the less pretentious elegance of its smaller and less numerous buildings with their traceried roof crests are indicative of a greater cultural self-assurance. They are best translatable in terms of an eighteenth-century minuet. No city is so finely situated as Palenque, for it is built in the foothills of the great mountain range of Chiapas. Steep hills, rising behind, give its buildings a superb background, while from any doorway facing north one has an incomparable view over the plain below, a green carpet which unrolls as far as the eye can see across Chiapas and Tabasco to the unseen Gulf of Mexico, eighty miles away.

While this book was being written, a remarkable discovery was made at Palenque by the Mexican archæologist, Alberto Ruz. By

chance he noticed that a large slab in the floor of the inner room of the building called the Temple of the Inscriptions (Plate 5*b*) had finger-holes for raising it. It proved to be a trap door, and gave on a narrow vaulted staircase which led down into the heart of the pyramid. This staircase had been deliberately filled in ancient times from floor to capstone with rocks and earth, the removal of which was a slow business. A flight of steps led down to a landing, from which a second flight continued down in the opposite direction until, at a depth of about sixty feet, a passage, blocked with a wall, was reached. A few feet beyond the wall the way was again blocked, this time by a large stone slab. In front of it were the bones of six youths, who may have been attendants slain so that they could serve their master in the next world.

On removing the slab, the explorers looked down into a large vaulted room, which was a veritable fairy palace, for it was decked with stalagmites and stalactites formed by water dripping, century after century, from the pyramid above. Around the walls were nine stucco reliefs of gods (the nine lords of the underworld?); the greater part of the floor was occupied by a huge stone sarcophagus, the lid of which (estimated to weigh about five tons) was superbly carved (Plate 13). Glyphs on its side date the burial at about A.D. 700. Inside was the skeleton of a Maya chief decked with jade, and with a pear-shaped pearl, made of several pearls, over an inch long, as one of the treasures.

The vaulted chamber (its floor was slightly lower than that of the court outside and about seventy-five feet below the floor of the temple above) clearly had been built before the pyramid above, probably during the lifetime of the chief, and we can suppose that the staircase was filled in immediately after the burial.

In the pyramid of the High Priest's Grave, at distant Chichen Itza, a vertical shaft, carefully constructed and covered with slabs in the temple floor, leads to a natural cave. On the floor of this were found broken bones, jades, a couple of pearls, and other treasure. The shaft had been deliberately filled in ancient times, and in the fill were several burials, one above the other. These, too, perhaps, were the remains of slain attendants, but the presence of copper bells shows these burials to be considerably more recent than the Palenque burial. There is a similar shaft in one of the pyramids of Mayapan. More such secret burials may be found as time passes.

I had the good fortune to descend that Palenque staircase with



FIG. 5.—Interior of Room at Bonampak.

This shows the arrangement of the murals, the corbelled vaulting, the tie-poles, the bench which occupies most of the room, and the doorway on the left.

Ruz as my guide, but before the hidden chamber was reached. It was an experience I shall not forget. The past was very near, and it required little imagination to reverse the scene around me and picture the ancestors of Ruz, Maya labourers working to fill the staircase. One needed only to substitute pitch-pine torches for flashlights, breech-clouts for trousers, and a Maya head-man with artificially deformed head for Ruz.

Yaxchilan and Piedras Negras, on the banks of the great Usumacinta River which divides the Peten from Chiapas, and Copan, south-eastern outpost in distant Honduras, share with Palenque the honours in Maya sculpture.

Yaxchilan specialized in carved stone lintels spanning the exterior doorways of temples and palaces (most cities of the Central area used wooden lintels). Some of these are among the finest examples of Maya sculpture in existence (Plates 12-14, Fig. 15, page 191), but Yaxchilan's hieroglyphic texts are repetitious, the same phrases appearing over and over again on lintel and stela.

Piedras Negras equalled Yaxchilan and Copan in the delicate delineation of clothing and jewellery and the details of the elaborate head-dresses of its personages and in the grace with which the hieroglyphs were carved. Its specialities were stelæ showing gods seated in niches in Buddha-like poses, magnificent wall panels alive with figures and columns of glyphs, and sculptured daises, the last two features in which Palenque also led the way (Plates, 3, 9, 10, 14).

Copan, 2,000 feet above sea level, backing (not facing) on the river of the same name, stood high in both science and art (Plate 2). This centre appears to have been in the van in solving problems connected with the length of the tropical year, a matter of supreme importance to the Maya for ritual and divination, and there is some evidence that astronomers of Copan either formulated the extremely good eclipse tables used by the Mayas, or were sufficiently intelligent to recognize the brilliance of an outsider's work and embody his ideas in their own system. Yet in art Copan was equal to any other Maya city, and in one respect perhaps ahead of all, for the personages sculptured on some of its stelæ stand out from the stone mass of the shafts in a remarkable manner, and the friezes depicting seated individuals reveal exceptional skill in portraiture (Plate 11). In architecture, the inspiring hieroglyphic stairway of Copan stands alone. The riser of each step of this stone stairway is decorated with hieroglyphs, each deeply and carefully

carved. The flight of sixty-three steps rises majestically to a height of eighty-six feet above the level of the court. At intervals were seated five figures of gods or priests, each some six feet high, as though guarding the ascent to the temple which once crowned the summit. There is a decorative balustrade on each side of the stairway, making a total breadth of thirty-three feet. These balustrades, too, are elaborately carved with celestial bird-and-serpent monsters. Of the small temple which once stood at the top nothing remains except fragments of the plaster floor and a number of magnificently carved stones which once formed a hieroglyphic frieze on the inside of the temple at the level of the spring of the vault. The plaster fragments, on being fitted together like a jigsaw puzzle, revealed the original area of the floor!

From the doorway of this temple the Maya had a fine view of the ball court below and slightly to the right, with the stela-studded ceremonial court beyond, or if one turned half-left, he saw the temple, now prosaically named No. 11, with its beautifully sculptured friezes of individuals and mythological beings. The ball court with its sculptured markers set in the playing floor, its stone parrot heads, deeply tenoned three abreast on the side walls, and its vaulted temples on each side, at which the players made their offerings before and after the game, must have been one of the most magnificent in the Central area. One pictures the novitiate, busy with his religious duties on the summit of the pyramid of the hieroglyphic stairway, taking a surreptitious peek at a hotly contested match in the court below when the applause of the spectators advised him of some spectacular play.

This great city, with its magnificent stelæ, with the soft beauty of its light-green trachyte stone used in such imposing masses, and with the ornate pomp of its great hieroglyphic stairway, has an emotional magnificence enhanced by the grandeur of the surrounding mountains—*"Each give each a double charm | As pearls upon an Æthiop's arm."* There is a peaceful splendour here, which, the wickedness of child sacrifice forgotten or forgiven, now evokes the incomparable third movement of Beethoven's Fifth Symphony.

Quirigua, on the railroad between Puerto Barrios and Guatemala City, lies in a fertile plain on the bank of the Motagua Valley, once rain forest, but in recent years banana land.

Quirigua has no high pyramid and but few stone buildings, but it is renowned among Maya centres for the loftiness and grace

of many of its carved sandstone stelæ and for its strange altars, huge boulders shaped as fantastic monsters of the sky, which so harmoniously combine ponderous mass and graceful intricacy of carved detail (Plate 11*b*; Fig. 13, pages 162-3, Figs. 16*b-d*, page 207). There is about it a sturdy, likeable independence, manifest in its sculptural art and hieroglyphic texts.

Lubaantun, in southern British Honduras, has no stelæ or corbelled buildings, yet asserts its individuality in the beautiful stepped effect of its pyramids executed in square blocks of superbly cut crystalline limestone, which has the appearance and most of the qualities of marble. Perhaps in the past they were not so beautiful as when I saw them a few years ago, with their dazzling whiteness partly masked by the deep green foliage and coral flowers of great clumps of wild begonias lodged in the interstices between the tiers. Bonampak, in the forests of Chiapas, is famed for its murals representing dances, ceremonies, and scenes of battle (Plate 17*b*; Figs. 5-7, pages 77, 87, 90). There, too, I have seen masses of begonias, but of another, white, variety. The roll call of stately cities with their individual characteristics, is not confined to the Central area; in Yucatan and Campeche we find an emphasis on huge buildings of the so-called palace type, often two or three stories high (Plates 6, 7).

Sayil supplies an extreme example of these "apartment" buildings, for its largest building has about one hundred rooms arranged in three stories, the second and third set back, so that the roofs of the first and second floors served as terraces for the occupants of the second and third floors. A great central staircase leads to the third floor. A mass such as this could be awkward and monotonous, but the Maya architects introduced contrasts and variations which give an extraordinary lightness to the bulk (Plate 3). For instance, the second floor has very wide doorways with triple entrances formed by pairs of columns (a feature practically never found in the Central area), in contrast to the single narrow entrances to the rooms of the third floor and to most of those of the ground floor. The façade of the second story is profusely decorated with designs of engaged columns and masks of the rain dragons; the façade of the third story is largely undecorated, but was originally covered with stucco. This is a late classic building of the style called Puuc (derived from a range of low hills of that name in south-western Yucatan and adjacent parts of Campeche). The masonry, as in all buildings of this style, is massive concrete

faced with thin and beautifully cut stone, like tiles bedded in cement.

At nearby Uxmal the same Puuc style with its veneer masonry occurs, but there the most spectacular building is the so-called *Monjas* or Nunnery. Four ranges of rooms enclose a quadrangle, like a cloister garth, entered by a vaulted gateway in the middle of the south range (Plate 6, 8). In 1843, Stephens described the quadrangle in these words: "We enter a noble courtyard, with four great façades looking down upon it, each ornamented from one end to the other with the richest and most intricate carving known in the art of the buildings of Uxmal; presenting a scene of strange magnificence, surpassing any that is now to be seen among its ruins." A noble flight of stairs flanked by four rooms on each side leads to the second story of the north range. The garth itself is eighty-six yards by seventy-one yards, an area nearly half as large again as a football field. Once more we see the diversity of decoration. The north range carries frets and masks of rain dragons; the east range has as its motif a lattice pattern derived from the scales of a serpent, on which are superimposed lengthening two-headed snakes with horizontal barlike bodies placed one above the other to form huge V's. On the other façades are such details as writhing snakes, statues of men or gods, little models of huts (Fig. 18, page 233), grecques, and yet more masks. To the east the great mass of the pyramid and temple of the Adivino rises in heavy domination of the scene. The effect should be overpowering, but it is not. The great mass of the Adivino (it is over 100 feet high), rising like some New World Tower of Babel, together with the size of the quadrangle, emphasize the lack of height of the Nunnery buildings so that they seem to cling to mother earth. The effect is that produced by a French cathedral on the town huddling around its base, or the buildings of Fountains Abbey beside its soaring tower. There is something of humility in these buildings despite the exuberance of their façades.

The name of "Nunnery" was given to the group in early Colonial times by Spaniards—always more interested in chastity in theory than in practice—on the assumption, surely mistaken, that this building was occupied by the Maya Vestal Virgins. The group is late, dating from the very close of the Classic Period or perhaps a few decades later. Some of the rooms are the widest with corbelled vaulting (excluding those with more than one line

of vaults owing to the use of interior columns) in the Maya area, reaching a width of some fourteen feet.

Nearby is the so-called House of the Governor, a range of rooms over 100 yards long, overlooking the whole city and standing on a vast platform. It is one of the most imposing buildings in the Maya area and of about the same date as the Nunnery.

For other diversities in architecture one could turn to the Rio Bec area, where buildings flanked by high ornamental towers are found (Plate 7*b*), or the nearby Chenes, of Campeche, with façades constructed so that the main doorway is the gaping mouth of a rain monster, his nose above and eyes to each side of the doorway, and the teeth of his lower jaw the sill of the doorway.

One other example must suffice, and for that we shall turn from the lowlands of the Central and Northern areas, and journey to the highlands of Guatemala, outside the area of the hieroglyphic stela and corbelled-vaulting complex.

Kaminaljuyu, on the outskirts of Guatemala City, was—for much of it has been demolished—a most important city in the early Classic Period. Before that it had a long history stretching far back into the Formative horizon, and it continued, with diminished resources, into the late Classic Period. The site is of particular interest to archæologists because of the very rich tombs found in and before its rather unpretentious pyramids. The contents of these tombs show strong influences from Central Mexico, and particularly from the great city of Teotihuacan (Fig. 17*a*, page 224). These foreign influences are reflected also in some of the pyramids, for they have the same sort of horizontal panel framed top and bottom with a moulding such as is found in Teotihuacan, but, so far as our present knowledge goes, in no Maya lowland city except Chichen Itza, where it occurs in buildings of the Mexican Period (Plate 6*c*). The materials of which the pyramids were constructed are also quite different from those of lowland sites. There are no vaulted stone temples, but post-holes on the summits of pyramids indicate buildings with thatched roofs. Kaminaljuyu is also remarkable for the extraordinary number of ball courts within its limits.

Peten cities are built of limestone; dolomite was employed for building in parts of the Usumacinta Valley; Copan, as already noted, used a trachyte with a delightful and distinctive green hue; Quirigua quarried sandstone for its buildings and stelæ; and Lubaantun used a crystalline limestone. At Comalcalco, Chiapas,

and at nearby Bellote, on the western flank of the Maya area, buildings were of kiln-fired bricks, some of which have simple incised patterns. The use of brick has been explained by the absence in that area of suitable building stone; it is one of the few places in America where kiln-fired bricks were used architecturally. Kaminaljuyu at one time used adobe for its pyramids, but later faced them with pumice set in mud with a very thin outer skin of soft concrete of gravel coated with lime plaster. Some sites expressed their individuality in the shapes of their stelæ. Cancuen, for example, erected stelæ with castellated tops, a pleasant change from the blunt rounded tops of most Maya centres; Quirigua had its slender shafts (Plate 11*b*).

It was, however, in planning that the greatest diversity occurred. Although there is great variety in the size of sites, this was not merely a matter of wealth. Some very large sites, such as Holmul, in east central Peten, erected very few or no stelæ, whereas others, such as Pusilha, in southern British Honduras, set up a considerable number of carved stelæ, but built only low mounds of boulders and rocks without any attempt to dress their faces. In the case of Pusilha this is particularly surprising, because a scant thirty miles away, at Lubaantun, which pottery vessels and figurines show to have been flourishing at the same time, one finds the exact opposite—no stelæ but beautiful masonry. It is difficult to explain such dissimilarities. There is an abundance of limestone at Pusilha, such as was dressed elsewhere. Indeed, it was dressed and sculptured at Pusilha itself when shaped as stelæ. As a matter of fact, the difference was one of material rather than of appearance, since the Maya coated the surfaces of all their pyramids, mounds, and buildings with lime stucco, even covering the finest stone, such as the crystalline limestone of Lubaantun or the beautiful green-tinged trachyte of Copan, in this manner. There is, therefore, little doubt that the mounds of Pusilha were not just heaps of boulders, but were finished off with flat stuccoed surfaces, the interstices being filled with a mortar, now disintegrated, to make a fairly even bed for the application of the stucco coating.

Some cities were concentrated; others were spread out with different groups separated from one another (Plate 2). In some cases hilly terrain may have dictated this dispersal, but in others there appears to be no geographical cause. Orientation of the buildings to the points of the compass is another variable factor.

In addition to the many large sites, the Canterburys, Romes,

and Rheimses of the Maya area, there were scores of smaller centres, the equivalent of our small towns or villages. The study of this type of small grouping is important, for it, like Sinclair Lewis' Gopher Prairie, mirrors more faithfully the native culture because it is less exposed to external modifications. Such foreign ideas as do reach that far have been transmitted through the large centres which have first modified and naturalized the exotic. The modern tendency in history is to pay less attention to pomp and circumstance, and rather strive to recreate and stress the cultural and physical background against which the average man played his simple part.

San José, in west central British Honduras, is perhaps typical of the smaller ceremonial centre. It comprises four separate small groups of ruins, each consisting of a court flanked by mounds. Three of the groups include pyramids up to forty feet high. There are also a small ball court, a reservoir, one small plain stela, and one fairly elaborate two-story palace with eleven vaulted rooms, several benches or daises, and an interior staircase. The next most pretentious structure has six rooms arranged in two parallel rows with a seventh transverse room at one end; all are corbelled (Fig. 4e, page 67). Another building is a mixture of corbelled and non-corbelled rooms. The pottery shows a continuous occupation of the site from the Formative Period through the Classic Period, and probably into the first stages of the Mexican Period. The uncovering of burials revealed for the most part skeletons laid on their sides with knees flexed and doubled up so that they are in front of the trunk. With them are usually some of the deceased's possessions, not the best to be had, but such as one would expect to find around a member of the *bourgeoisie* of a small provincial centre who distrusted ostentation and the ways of "furriners".

Nevertheless, San José was not entirely a backwater, as a considerable number of trade pieces attest (Fig. 16a, page 207). These include certain pottery jars with a slate-like slip imported from Yucatan, spindle whorls from Veracruz, shells from the shores of the Pacific, obsidian, perhaps from Zacapa, on the north-eastern flank of the Guatemalan highlands, jade from some unidentified source, copper objects perhaps from Mexico, coral from the Caribbean, marble vessels probably from Honduras, and large quantities of painted pottery, certainly not of local manufacture. The San Joséans did not produce any sculptured works, but they adorned their buildings with designs in stucco, and

clearly were acquainted with Maya hieroglyphs because they decorated the front of one dais with glyphs of the same material. Not unnaturally, they were a bit behind the times. This shows in their architecture, for the type of masonry they were using at one time had already gone out of date elsewhere. There is a little evidence pointing to the practice of human sacrifice, both of adults and of children, but this, so far as the evidence goes, was on rather a limited scale, in keeping with the provincial character of the site.

One or two of the smaller buildings may have served as permanent residences, but in other respects San José was a small-scale ceremonial centre, of which there must be literally scores in the Central area and perhaps hundreds in the whole Maya area.

We have then a picture of great numbers of Maya cities and towns flourishing during the Classic Period (A.D. 300-900) and showing marked diversity in terms of space and time. Here is no slavish copying, but a virility which finds expression in experiment and diversification, yet—and here I am speaking of the lowland area—retaining a marked similarity.

Does this unity with local diversification indicate a system of city states, such as existed in Greece or mediæval Italy, with political independence but a fairly uniform culture and a common language, or does it point to a single state? Frankly, the answer must be largely guesswork, although there are factors which can influence the conclusion.

In favour of a fair degree of unity is the fact that the language was practically the same throughout the lowland area, for the differences between lowland languages and dialects 1,000 to 1,500 years ago must have been less than they are today, and there seems little doubt that a Chol would have understood a Yucatec, or a Tzotzil a Chorti, certainly as easily as a Neapolitan understands a native of Turin. Sculpture and name-glyphs of gods demonstrate that religious concepts must have been fairly uniform throughout the area (information for Yucatan not as full as it might be), at least so far as the hierarchic cult is concerned, although the religious ideas of the peasants may have shown some variation from region to region. The whole philosophy of time—a hierarchic trait, with the more abstract implication of which the peasants surely were unacquainted—was found from one end of the Maya lowlands to the other, as the glyphic inscriptions demonstrate.

The absence of fortifications, the fact that most classic centres are in open country, and little evidence of warfare (the Bonampak

murals of fighting [Fig. 6, page 87] rather clearly show a raid, not regular warfare) argue for an assumption of prevailing peace during the Classic Period, as does the incredible building activity which apparently was carried on uninterruptedly throughout the period. Such evidence as there is of warfare is largely confined to the south-west of the Maya area, not too far removed from non-Maya peoples such as the Zoque and Chiapanec, and is strongest for the last decades of the Classic Period. I rather doubt that the Maya of the Classic Period used wooden fortifications (long since perished) in view of their long tradition of masonry construction, which, after all, is fire-resistant.

Hieroglyphic texts show that new ideas flowed freely from one city to another. Thus a new method of computing moons appeared at Copan in A.D. 682, and spread rapidly to almost all important cities in the Central area. About A.D. 700, Copan appears to have produced the most up-to-date computation of the length of the tropical year (all specialists in the field do not accept this interpretation of the hieroglyphic calculations, but I am satisfied that it is correct), and recorded it on a number of monuments. The sides of one altar commemorating this achievement are carved with the figures of sixteen persons who face inwards toward the date in question. Teeple, who first advanced the explanation that this was a computation of the length of the solar year, speaks felicitously of this "group photograph of the Copan Academy of Sciences taken just after their sessions".

Twenty years later, another altar was dedicated commemorating that anniversary of the original computation, and on it are carved twenty persons facing inwards toward the date. More than half of them wear masks of animals or represent gods. One of them is disguised as a bat. Unfortunately, we know the ancient names of very few Maya cities or linguistic groups, but it is worth recalling that *Tzotzil*, the name for one of the big linguistic groups of Chiapas, means "bat". It seems, therefore, not too impossible that membership in Teeple's Copan Academy of Sciences was not confined to priest-astronomers from Copan, but was composed of representatives of the whole Maya lowlands, and among those present was a representative of the Tzotzil. In that case, and admittedly the case is not too strong, we have possible evidence of lowland unity.

Other lines of evidence indicate, at least, friendly relations between cities. Cities developed certain glyphs of their own and

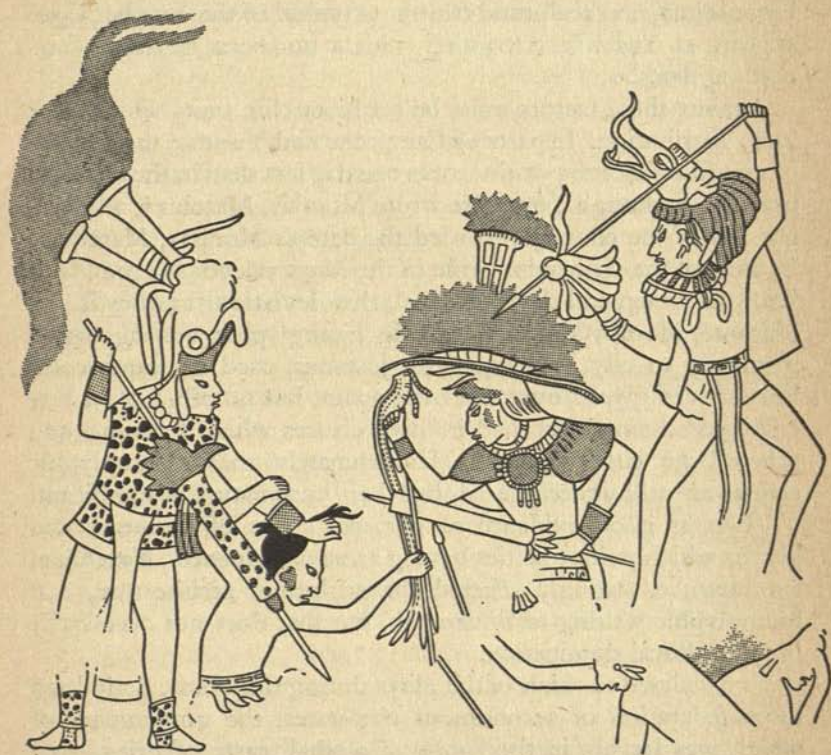


FIG. 6.—A Raid on the Enemy.

Part of a mural at Bonampak (about A.D. 775), with scene showing the head chief and his assistants leading a raid against a neighbouring village. The head chief, with jaguar tunic and stabbing spear, has taken a captive (grasping by the hair symbolizes capture). Note flexible shield and grotesque head-dresses. Lower part of design damaged. (*After Antonio Tejada and Agustin Villagra.*)

used them frequently, but sometimes these local glyphs were borrowed by other cities. For instance, one glyph which originated at Piedras Negras was subsequently adopted by Palenque. Also, influences in both architecture and sculpture passed from one region to another. Peten architectural concepts spread to the Usumacinta, and sculptural treatment typical of the Northern area appears at Yaxchilan, together with a northern method of recording dates.

Against these factors must be set hierarchic traits which have local distribution. In parts of Campeche and Yucatan the method of recording month positions was one day less than in the standard practice, as though Yorkshire wrote Monday, March 15, when all the rest of the country recorded the date as Monday, March 16. In view of the tremendous role of the Maya calendar in the life of both the group and the individual, that deviationist policy is significant. Moreover, the clauses in hieroglyphic writing varied from city to city. Palenque, for instance, used the same combinations of glyphs over and over again, but no other Maya city employed them. Each had its own clauses which Palenque and other large cities ignored. Unfortunately these hieroglyphic clauses are still undeciphered, but their local nature is significant.

There is good evidence of regional styles of sculpture and glyphs which point to cities having areas of influence. Yaxchilan, for instance, strongly affected the sculpture, architecture, and hieroglyphic writing of Bonampak, but that does not necessarily imply political domination.

I am inclined to think of the Maya during the Classic Period as a loose federation of autonomous city-states, the government of which was largely in the hands of a small caste of priests and nobles, related by blood and dominated by religious motifs. It is quite likely that, as in Central Mexico, the rulership of each city-state was dual: One chief was the civil ruler, but also with priestly functions (the *halach uinic*; the best Maya dictionary translates this as both governor and bishop); the other devoted the whole of his time to priestly and astrological duties. The ruling class would have been a small quasi-religious minority, holding the peasant masses in subjection by its claim to know how to satisfy, please, and, perhaps, control the gods by magico-religious processes. Withal I suspect the rule was fairly benevolent except for the constant call on the people for labour for bigger and better pyramids, temples, and "palaces". Perhaps the closest parallel to this theo-

cracy was the benevolent Jesuit rule of the Guarani in seventeenth-century Paraguay.

Perhaps we can assume that relations between city-states of the Classic Period were, on the whole, quite friendly. Presumably their rulers were related; certainly they shared the same upbringing, education, taste in art, and religious beliefs. That does not necessarily lead one to conclude that relations were always cordial. I think one can assume fairly constant friction over boundaries, sometimes leading to a little fighting, and occasional raids on outlying parts of a neighbouring city-state to assure a supply of sacrificial victims, but I think the evidence is against the assumption of regular warfare on a considerable scale. I doubt that there was any supreme ruler over all the city-states, but we could probably assume that larger cities tended to dominate the smaller ones. For instance, one imagines the high priest of Tikal being held in high regard by the peoples of neighbouring city-states, such as Nakum and Yaxha, because of the magnificence of his seat of office, and one supposes that a raid by Tikal on some outlying settlement in Nakum territory would have been endured without thought of retaliation, but the Maya motto was "live and let live", and somehow I don't see too much bullying of a small city-state by a big one, although affection for the Maya may have influenced that opinion.

The evidence of Bonampak's ties to Yaxchilan seems to show that a city-state could consist of more than one city. The fact that boundaries between styles of architecture or of glyphic writing do not seem to correspond to linguistic areas has some bearing on the problem. Thus, we have every reason to believe that both those who built in Rio Bec style (Plate 7*b*) and those who used Puuc style (Plate 3*a*) spoke the same Maya language, Yucatec. Similarly, peoples of such Peten cities as Tikal or Uaxactun almost certainly spoke a dialect somewhere between Yucatec and the Chol-Chontal dialects which were probably current in Yaxchilan, Piedras Negras, and Palenque, where local styles in art and architecture prevailed. Copan spoke a variant of eastern Chol, differing mainly in the substitution of *r* for *l*. Minor differences corresponding to dialectical variations probably appeared in the arts and crafts and the religious concepts of the peasant villagers, not in the manifestations of the hierarchic cult.

One has then a picture of this whole lowland area, excluding savannah, swamp, and other sections unsuited to settlement,

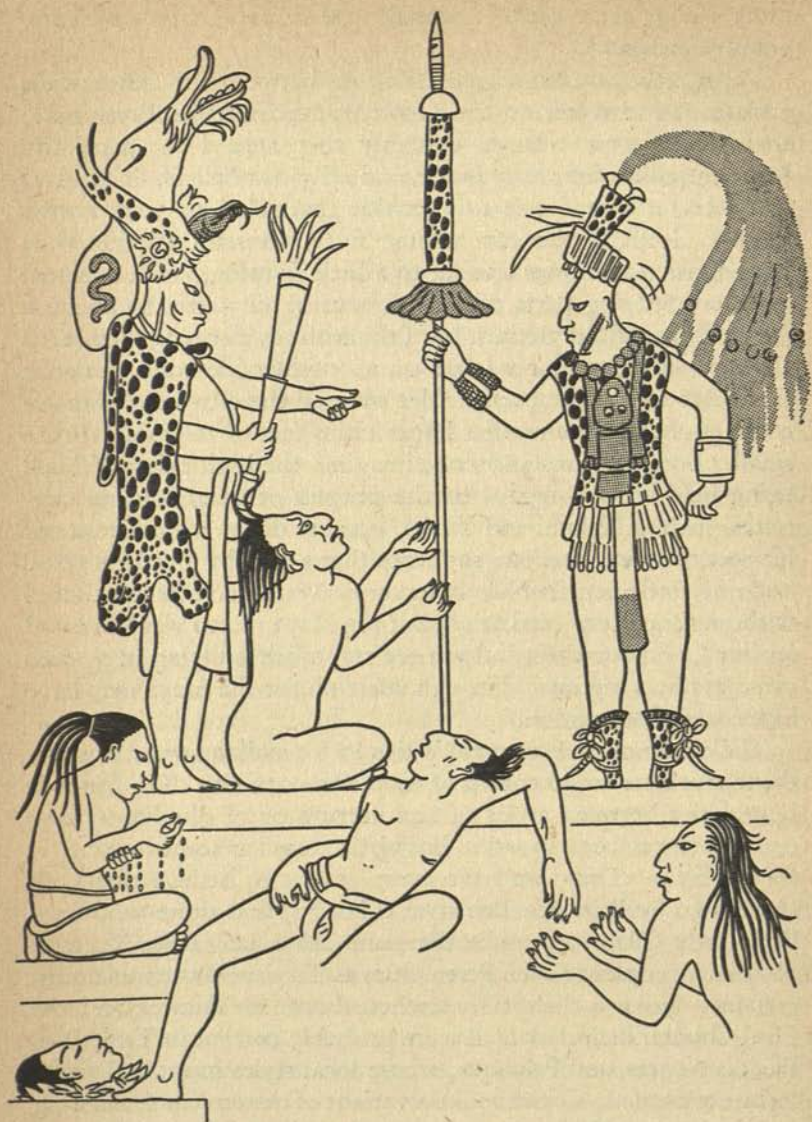


FIG. 7.—Judgment on the Captives.

Part of a mural at Bonampak, a sequel to the raid (Fig. 6). A captive in fear before the head chief, a dead man in a posture worthy of Michelangelo below, and captive from whose fingers blood drips. The head chief is decked in jade and wears the same jaguar tunic as in the previous scene. (After Antonio Tejeda and Agustín Villagra.)

studded with countless ceremonial centres, varying in size from those comprising four thatched hut-temples atop simple platforms enclosing a court scarcely fifty feet in each direction to vast masses of platforms and pyramids, palaces and temples, rising jaggedly like granaries in Iowa or grouped with the architectural harmony of an Andalusian city. The country around, one visualizes as a patchwork of forest, cleared acres, and land reverting to forest, with the first the dominant factor, and here and there the thatched huts of the peasants grouped in fours and fives in clearings shaded by fruit trees, those of the priests and other aristocrats clustered on the outskirts of the ceremonial centres. These last might be empty, but should you return tomorrow, you would find them filled with crowds present for some ceremony or for market; and visiting them again a month hence, when the corn needs little attention, you might see files of men, women, and children carrying rocks and earth for the enlargement of a pyramid, and masons and carpenters busy laying yet more stone walls or stairways or cutting lintels or cross-ties for yet another temple.

Through the seventh, eighth, and part of the ninth century the pace quickened; more and more buildings were added, more and more stelæ were erected. Quality also improved. Masonry was better, buildings more spacious, pottery finer, stelæ more elaborate. Sculpture? Growing sensitivity and inspiration and then a touch of flamboyancy. Art students tell us that the last is a signal that the style has run its course and the seeds of decay are planted in the art, and perhaps also in the culture that gave it birth.

COLLAPSE OF THE CITY-STATES

Certainly for the Maya that was true. Toward the close of this florescence Maya cities were bright-hued as autumn foliage, and then the leaves began to fall. One by one, activities at the various cities ceased; no more stelæ were erected, no more temples or "palaces" were built. In some cases work ceased so suddenly that platforms built to support buildings were left uncrowned, and at Uaxactun the walls of the latest building were left unfinished. We can best date the cessation of effort by the dates of the last hieroglyphic inscriptions.

Copan ceased to erect hieroglyphic monuments in A.D. 800, the year Charlemagne was crowned in Rome; Quirigua, Piedras Negras, and Etzna (in Campeche) followed suit in A.D. 810;

Tila gave up in A.D. 830; Oxkintok's last date is A.D. 849; Tikal and Seibal dedicated their last stelæ in A.D. 869, two years before Alfred came to the throne; Uaxactun, Xultun, Xamantun, and Chichen Itza kept going until A.D. 889 (the last perhaps a little later). La Muñeca, not far north of the border between Campeche and Peten, has a stela which probably commemorates A.D. 909, and possibly the same date may be recorded on the latest stela at Naranjo. Just possibly a crude stela at San Lorenzo, near La Muñeca, carries a Maya date (10.5.0.0.0 in Maya notation) equivalent to A.D. 928, the latest of all. Five years later the Magyar hordes were turned back at the battle of Unstrut, and European civilization was saved.

The latest known date at Palenque (except for one inscribed on a pot) is A.D. 784, but as Palenque dates occur largely on wall tablets or stuccoed on pilasters, it is possible that still-buried tablets or stuccoed glyphs now destroyed carry the count forward. Yaxchilan inscriptions still cannot be dated in every case, but the Yaxchilan-Bonampak region probably was active until about A.D. 870.

A number of these very late stelæ are in degenerate style, and a few show Mexican influence (Toltec type of sandal and style of representation on the latest stela at Seibal; a god with spear and spear-thrower emerging from a sort of sun disk, reminiscent of Toltec treatment at Chichen Itza, on the latest stela at Ucanal), both of which facts have a bearing on the collapse of these cities of the Classic Period.

For many years it was believed that for some reason or other the Maya of the Central area abandoned their cities and migrated north to Yucatan and south into the highlands of Guatemala, in both of which regions they established Maya culture, which subsequently blossomed forth into a renaissance. More recent archaeological work has shown that thesis to be untenable; both regions were flourishing centres of Maya culture all through the Classic Period.

For the cessation of activities in the various ceremonial centres a number of theories have been advanced, none of which has much to recommend it. It has been suggested that Maya methods of agriculture (cutting and burning forest for one- or two-year plantings and then allowing the clearings to revert to forest for some ten years) were so wasteful that in time and with an increase of population lack of food would have forced migration. To refute

this theory, one can note that the soil around Quirigua, frequently fertilized by floodings of the Motagua River, is very rich, yet Quirigua was one of the earlier cities to cease functioning.

The explanation has also been offered that repeated clearing of forest was followed by the appearance of grass, which gradually covered the land, producing savannahs which the Maya, having no ploughs or even spades (the shallow soil in many parts would make such implements unusable even if the Maya had possessed them), were unable to break up to plant their crops. This explanation, strongly advocated by my late colleague, Sylvanus G. Morley, was advanced by agronomists of the United States Department of Agriculture. It is quite neat, but I am not certain that it is tenable. It is true that grass will appear in cleared forest land if those patches are kept free of trees and shrubs for several years, but the Maya abandoned their clearings after one or two seasons' use, and in that short time grass cannot establish itself. I have noticed that verges of roads cut in the forests and used for several years to extract mahogany are often of grass, but when those roads are abandoned, they revert rapidly to forest. Some years ago I was in Chicchanha, an important Maya town in southern Quintana Roo until its abandonment in 1852. During its occupation the main plaza and the streets must have been under grass, as in any other Maya town. Yet, when I visited the town, it was entirely covered with deep forest, to a layman indistinguishable from the surrounding virgin forest. In fact, it was not until I saw the walls of houses and gardens and then the ruined church that I realized that I was riding down former streets and across what had once been an extensive plaza. Thus forest will quickly displace grass, even when, as in the plaza of Chicchanha, it had been established for very many years.

The botanist Lundell has modified this theory, supposing that it applies only to regions where the soil is deep, such as the savannahs of Campeche and south of Lake Peten. These are bottom lands and not too extensive. The fact that large Maya sites are not found on or even contiguous to them gives little support for the theory that their growth caused the desertion of the Maya centres. There are no savannah lands around the great concentration of ceremonial centres in the northern Peten, or around Quirigua with its deep soil, or along the Usumacinta. I suspect those savannahs were formed long before the Classic Period reached its peak.

The abandonment of the cities has also been attributed to the

incidence of malaria or yellow fever, but both of those diseases are almost certainly of Old World origin, introduced to the New World by the Spaniards. Hookworm is a serious destroyer in this region at the present time, but that, too, is a post-Columbian importation. Moreover, all these explanations call for a gradual death of Maya culture in city after city, but the building already mentioned at Uaxactun with its half-built walls suggest a sudden catastrophe.

I think the fundamental mistake has been to assume that the whole area was abandoned because activities ceased in the great ceremonial centres. As a matter of fact, we know that there was a considerable population around Copan in early colonial days, and Cortés, in his march across the peninsula, came across quite a number of settlements. Friars and military groups in the sixteenth, seventeenth, and eighteenth centuries reported many other groups, although smallpox and other newly introduced diseases had carried off large numbers of inhabitants. Clearly the population of the Central area at the time of the Spanish Conquest was considerably smaller than it had been 800 years earlier, but it is incorrect to suppose that this vast area had been a vacuum for hundreds of years. This later population might have descended from groups subsequently filtering into the region, but it is more reasonable to assume that they are the descendants of the original peasant population of the ninth century.

It is not illogical to suppose that there was a series of peasant revolts against the theocratic minority of priests, "squarsons" (a term for that phenomenon of eighteenth-century English life, the squire who was also the village parson), and nobles. This may have been caused by the ever-growing demands for service in construction work and in the production of food for an increasing number of non-producers. Exotic religious developments, such as the cult of the planet Venus, adopted by the hierarchy, may have driven a wedge between the two groups, making the peasants feel that the hierarchy was no longer performing its main function, that of propitiating the gods of the soil in whom, alone, they heartily believed. I am rather dubious of physical invasion and conquest of the Central area, but there may well have been ideological invasions, as foreign ideas on very late stelæ would indicate. Whether degeneracy in art—and it is apparent only in a few cities—reflects a moral weakening in the hierarchy is a question which probably can never be answered. Huxley, I think,

showed that Italian art was at its purest when morals were at a very low level. (In our age both seem to have hit bottom together!)

It is suggestive that the collapse of the stela cult seems to have started across the base of the Peninsula of Yucatan, the region most easily invaded by the revolutionary ideas or perhaps even armies of non-Maya peoples or of the nonconformist Maya of the highlands, and its last stronghold was in the very remote region of northern Peten and southern Campeche. This, however, was only a general tendency. Around Comitan, in the Chiapan highlands, which was certainly an outpost of the stela cult on the frontier of the hierarchic empire, monuments continued to be erected until the middle of the ninth century, and there was another hold-out in the middle Usumacinta Valley. However, all sorts of local circumstances may account for these, just as they account for the present distribution of kingdoms in modern Europe.

The gradualness of the collapse over the whole area argues against the view that there was strong central authority and in favour of the city-state theory. In my opinion, and it is one on which I would not stake heavily, in city after city the ruling group was driven out or, more probably, massacred by the dependent peasants, and power then passed to peasant leaders and small-town witch-doctors. The building programme and the erection of stelæ ceased abruptly, but the people still repaired to the ceremonial centres for certain religious services and perhaps for markets, but the buildings, no longer kept up, gradually fell into disrepair. Vegetation began to invade the courts and terraces and to lodge on the roofs of buildings.

There is some evidence for these assertions. Excavation at Uaxactun revealed that after the buildings had been abandoned, burials were still made in the city. One body was placed in the debris of a collapsed room; another lay on an accumulation of dirt in a corner of a court; another (a child) was on a dais or bench, with a few stones and much charcoal placed around it and with a covering of dirt and fall from the roof. In two cases the skulls were deformed, indicating that these were not post-Columbian burials. The child had a piece of jade in the mouth (a common Middle American practice) and two jade beads. As children were commonly sacrificed, the presence of the child with jades and charcoal in this abandoned room would strongly suggest that it had been brought there to be sacrificed. Burials have also been

found in collapsed rooms at other sites, notably a burial with pottery of post-classical types at Copan.

As buildings began to collapse, doorways were slovenly blocked to shut them off, and refuse containing broken pottery and bones is found overlying thin deposits of debris from disintegrating vaults and walls. Shaped spindle-whorls, unknown in the Classic Period of the Peten, occur both at Uaxactun and San José in thin deposits of dirt above the latest floors. A bow was found on the floor of one room at Uaxactun below about eight feet of collapsed masonry.

Such data indicate visits to the sites after their abandonment, half-hearted attempts to keep them in service by blocking off collapsed rooms, and probable use of the buildings for human sacrifices. It is, I think, a fair assumption that these activities can be



attributed to the peasant population after the massacre or expulsion of the hierarchy. The jades might have been loot, for peasants would not have owned such valuables; the crude masonry of one of the blocked doorways at Uaxactun suggests that the work was done after the last of the masons working for the hierarchy had joined the great majority.

At Piedras Negras a magnificent dais (Plate 14a) had been deliberately smashed. This destruction might have been the work of invaders, but, equally well or better, it could have been an act of vengeance or spite by revolting peasants, since the dais was the seat of former rule—a sort of razing of the Bastille. It is also possible that the damage is more recent and is attributable to superstitious fear. Modern Mayas believe that stelæ, incense-burners with faces on them, and suchlike relics of the past house evil spirits which, coming to life at night, cause death and sickness, and they frequently destroy them out of fear (the beautiful murals at Santa Rita, in northern British Honduras, were destroyed by Indians probably for that reason, almost as soon as they were uncovered and before they had been completely copied).

However, the fact that the figures of gods on the Piedras Negras stelæ were not likewise destroyed perhaps indicates that the damage to the throne was inflicted neither by invaders nor by superstitious Indians, but by revolting peasants who attacked the symbol of their civil bondage, but respected the images of their gods.

In Yucatan the epilogue to the fall of the great cities was somewhat different, as we shall see in the next chapter.

In all probability the causes of the collapse will never be surely known, and writers will be speculating on the matter long after this book shall have been forgotten.

Shelley a century and a half ago summed up a like situation in an Old World setting:

*And on the pedestal these words appear:
"My name is Ozymandias, king of kings:
Look on my works, ye mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare,
The lone and level sands stretch far away.*



III. The Decline and Fall of Maya Civilization



*Vain the ambitions of kings
Who seek by trophies and dead things
To leave a living name behind,
And weave but nets to catch the wind.*

—John Webster (1580?–1623?)

WAX MOTH IN THE MAYA HIVE

IN *Actions and Reactions* Kipling published a short parable, "The Mother Hive", the story of the moral and physical degeneration of a hive. Working bees lay eggs; wax moths get into the hive; misshapen oddities are born in increasing numbers; the young bees refuse their duties; circular cells are built; for a time the hive is without a queen. Finally the apiarist and his son open the hive and destroy its contents, except for a very small band of the old good stock which escapes to swarm on a nearby branch, ready to start again.

"'Why, this isn't a hive! This is a museum of curiosities,' said the voice behind the Veil. It was only the Bee Master talking to his son. 'Can you blame 'em, father?' said a second voice. 'It's rotten with wax moth.' . . . 'Aren't you confusing *post hoc* with *propter hoc*?' said the Bee Master. 'Wax moth only succeed when weak bees let them in.'"

Kipling addressed his parable to Edwardian England. For him the key to that moral disintegration was over-population; the remedy, emigration. Yet the parable can be applied to any culture, including the Maya, in process of degeneration.

The uncouth oddities and the circular cells of the Maya hive are plain to see, as are its combs riddled with the tunnels of the wax moth. We can only guess at the weaknesses that allowed these conditions to develop and lowered the guard so that the wax

moth could enter, the wax moth of Central America being the new concepts and influences of a morally weaker culture which originated in central Mexico. Kipling was not the first to employ this simile of the wax moth; centuries earlier the Maya thus stigmatized those interlopers who imposed these lower standards on them.

Brief mention has been made of the degeneration of sculpture which is visible in the closing days of the Classic Period in the Central area. The evidence for this degeneration and the appearance of new concepts is far stronger in Yucatan than in the Central area, which, with the abandonment of the great ceremonial centres, passes from history. For Yucatan there is considerable archaeological evidence for continued, but reoriented, activity, and this is supplemented by historical data.

During the Classic Period the Northern area, comprising Yucatan and most of Campeche and Quintana Roo, had developed its own ideas in architecture and sculpture. In architecture the local styles, such as Puuc, Chenes, and Rio Bec, differ from architectural styles of the Central area to about the same degree that Perpendicular Gothic of England differs from the contemporary Flamboyant Gothic of France. That is to say, both used the same general principles and concepts, but each had its local character. Yet the unity derived from a common heritage far outweighed regional divergences. In sculpture there is a considerable body of low relief in the Classic tradition, although displaying fairly marked localisms, but there are also other styles with little in common with typical work of the Central area, and yet other carvings which are quite foreign to Classic treatment. Miss Tatiana Proskouriakoff, who has made a special study of this subject, remarks of Yucatecan sculpture that it is "essentially heterogeneous and seems to represent an imperfect fusion of several independent styles". Some sculptures—notably a series of dwarf-like figures with distended stomachs which have parallels in the art of southern Veracruz—indicate the presence of non-Maya influences in Yucatan during the Classic Period. The little dwarf-like figures in their very freakishness seem to reflect an unbalanced culture. Perhaps it is a subjective approach, but a lot of these odd sculptures convey to me messages of cultural unhealthiness or restlessness.

There is, too, a not inconsiderable body of phallic sculpture in Yucatan which probably made its appearance at the close of the

Classic Period and continued into the Mexican period. The dating of this intrusion is not too secure, but phallic symbols are numerous at Uxmal, which did not long survive the close of the Classic Period, and appear in one building of the Classic Period at Chichen Itza. This is the more remarkable in that Maya sculpture of the Central area is entirely free of any such concept. Such ideas are strongly developed in southern Veracruz, and it is rather clear that it was from that region that the cult reached Yucatan. It continued during the Mexican Period, and the fact that it was a foreign idea and distasteful to the Maya is brought out in passages in the books of Chilam Balam.

The acceptance of such concepts, even if a minority looked on them as not consonant with the old Maya ideal of moderation in all things, is, I think, symptomatic of a sick culture; the country was ripe for a change.

While Maya civilization had ripened in the sun of the Classic Period, its cultural cousins, descended from the same ancestral Formative Period, had also blossomed. Great centres such as Teotihuacan, near Mexico City, Monte Alban, standard-bearer of Zapotec civilization, Tajin, in central Veracruz, and La Venta cities in the south of that state had developed along their individual lines the common heritage, but giving it a less spiritual, though more successfully material, aspect. As we have seen, strong influences from Teotihuacan, as well as secondary impulses from Monte Alban, had made themselves felt at the highland city of Kaminaljuyu, but at that time the cultures of Mexico had, like the classic cities of the Central area, a dominantly religious setting. Subsequently there seems to have been a shift to a more secular society, which later developed strongly militaristic tendencies. So far as we can now tell, the abandonment of the great ceremonial centres of the Maya Classic Period is partly paralleled in Mexico. The sites themselves were not abandoned in most cases, but there was a shift in emphasis from the building of religious structures, such as pyramids, to the erection of large secular edifices, in the form of residential quarters comprising rooms surrounding small patios. This type of structure had existed in the first half of the local equivalents of the Classic Period, but, to judge by murals which often adorn its walls, it had housed priests or leaders in a dominantly theocratic organization. Later the building of temples and pyramids yielded first place to secular construction. This shift seems to have been accompanied by a cul-

tural orientation toward warfare as a leading activity in the culture, and to have started about A.D. 650, before the Maya, to the south, had reached the peak of their Classic Period.

Warfare throughout Meso-America appears to have had its origin in the need for getting captives to sacrifice to the gods. The sun in particular had to be nourished with blood, preferably human. Each evening, after crossing the sky, the sun descended to the underworld, the land of death and of the gods of death, and, travelling across it from west to east during the night, he reached the east in time to rise again each morning. During his nightly passage through the underworld, he took on the qualities of death, so that when he emerged from the underworld at sunrise, he was in part a skeleton and could only recover his body and strength by quaffing blood, preferably human. Successful warfare ensured a plentiful supply without depletion of the tribal manpower. At the same time it developed, at the expense of the priesthood, a dominant warrior group. Warriors earned special privileges, not only in this world but in the next, as saviours of their people through their ability to keep the gods powerful and friendly.

It is not easy to weigh the motives for any action. To say that the capture of prisoners was the sole object of war in Meso-America would be untrue; the conquest of territory and the imposition of tribute were also important factors in Aztec times and perhaps before, but those may, I think, be regarded as secondary developments which became important after warfare had become a national industry. In any case, the Mexicans were convinced that war did pay, economically and spiritually. They trained young men for warfare; graded their young warriors and gave them privileges according to how many enemies they had captured; and organized military orders of knighthood. The chief of these were the orders of Eagles and Jaguars, so named because those creatures symbolized the sun in the sky and in the underworld respectively.

Our knowledge of Mexican militarism is derived largely from eye-witness accounts of Spaniards who had known the Aztec military machine or had got their material from sixteenth-century informants, but there is good reason for believing that militarism was well developed in central Mexico nearly half a millennium before, for the Toltec of Tula then had the orders of Jaguars and Eagles, and sculptures and murals there bear witness to the importance of militarism.

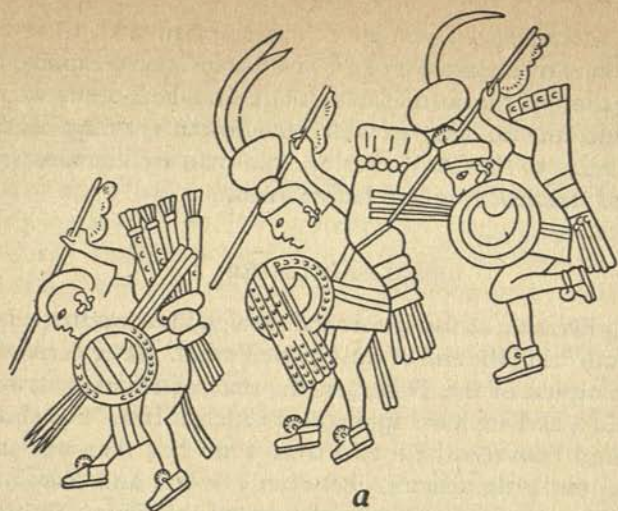
When Mexican groups moved into Yucatan with their vastly superior military training, organization, and even weapons, there could be little doubt of the outcome, particularly in view of the break-up of the old Classic culture and hierarchy. The Mexicans went into battle with sheaves of darts hurled by means of a mechanical arm, called a spear-thrower (Fig. 8*a*, *b*, page 103); the Maya used a stabbing spear, apparently hurling a volley of these, and then closing in for hand-to-hand fighting (Fig. 8*c*, page 103). The Mexican spear-thrower and dart gave their users the advantages of longer range, greater penetration, and vastly superior fire power. It was a New World precedent for Hitler's blitzkrieg against the Polish army of 1939 with its dependence on cavalry.

Probably the Mexican conquest did not achieve totality so far as area was concerned because of the numerical weakness of the invaders, but its influences were spread wide. Accordingly, this period is called the Mexican Period.

We have got ahead of our story; it is necessary to go back to the end of the Classic Period in Yucatan, and give such details as we can about these events and what led up to them.

Most of the Maya cities of Yucatan and Campeche seem to have been abandoned at the same time as those of the Central area or not long thereafter. This is almost certainly true of the great number of sites with Puuc architecture, such as Labna, Sayil, Kabah, and a score of others, and is probably true of the cities with Chenes and Rio Bec architecture. So far as the Puuc sites are concerned, excavations have not brought to light pottery of types known to have been used during the Mexican Period. The only exception to this rule is Uxmal, where small quantities of sherds attributable to the Mexican Period have been found, and where, too, Mexican motifs are more apparent than at any other Puuc site. Uxmal, too, it will be recalled, shows evidence of phallic worship, probably brought from the Gulf of Mexico and adopted by the Mexicans. Nevertheless, Uxmal very likely did not continue to function as a ceremonial centre long after the other sites were abandoned. We do not have clearly dated monuments for this city—or for that matter for most Puuc sites—but there is a painted capstone in the Nunnery which may record the date A.D. 909, and one can surmise that the city was abandoned in the tenth century, probably before it reached the half-way mark. Labna has a date corresponding to A.D. 869, and Oxkintok, A.D. 849.

At Kabah two door-jambs, which bear a date perhaps corre-



a



b



c

FIG. 8.—Warriors: Mexican and Maya.

Itza warriors with spear-throwers, darts, and round shields (*a* and *b*); a Maya warrior with less efficient spear and flexible shield (*c*). The warrior in *b*, with his head-dress with bird effigy, his breast ornament, back shield, and non-Maya features, duplicates figures on buildings at the distant Toltec city of Tula, north of Mexico City. *a*, from a mural; *b*, *c*, low-relief carvings. All from Chichen Itza, about A.D. 1100.

sponding to A.D. 879, show figures with spear-throwers and close-fitting jackets of Mexican type. These are probably indicative of the infiltration of Mexican ideas into Yucatan before the main invasion, since the building in which they occur is of typical Puuc style, referable to the Classic Period. Norman architecture, it will be recalled, reached England before 1066.

MEXICAN INTRUSION

The big invasion of foreigners and foreign ideas occurred in the century following the end of the Classic Period. They derive from Tula, the capital of the Toltec, in the state of Hidalgo, north of Mexico City, and are most apparent at Chichen Itza. The shortest line by land between these two sites is no less than 800 miles, just about twice the distance between London and Edinburgh. To us, living in the age of aeroplanes and the Flying Scotsman, that is a matter of a few hours travel; to the peoples of Middle America in the tenth century the distance was immense, for the only form of transportation was shanks' mare or for members of the aristocracy, a litter (part of the journey might have been accomplished in dugout canoes). Moreover, much of the intervening territory was hostile. Not only were the inhabitants unfriendly, but swamp, forest, and mountains were physical barriers. Yet there are the closest resemblances in the sculptural art, the architecture, the planning, the religious symbolism, and even the details of costume, ornaments, and weapons of the two cities (Plates 6*c*, 8*c*; Figs. 8-10, pages 103, 109, 121). The extraordinary fact is that nowhere between central Mexico and Yucatan have buildings or sculptures in this distinctive style been found, although it is still possible they may turn up somewhere in southern Veracruz or coastal Tabasco.

Sixteenth-century Spanish accounts and the Maya books of Chilam Balam are at variance concerning who introduced Mexican culture and when. Here we will not list all the possibilities, but follow the interpretation I consider most reasonable, remembering that other interpretations have been proposed and yet others will be advanced before the problem is finally, if ever, solved.

Chichen Itza, it should be recalled, was a Maya city of some importance during the Classic Period, as many buildings in the Maya tradition (Plate 7*a*), sculptures in the Yucatecan Classic style, and hierglyphic texts bear witness. The dated monuments con-

nected with these buildings cluster around the Maya equivalent of A.D. 889, which is approximately the end of the Classic Period in the Central area. There is a dubious date of A.D. 909 on the façade of the round tower called the Caracol, which appears to be one of the latest buildings in Maya style (Toltec ornaments were later added to it). There is a transitional building in the inner temple of Kukulcan (inside the later pyramid of El Castillo; Plate 5a), which is in Maya style but with certain Mexican motifs, and then come the mass of Toltec buildings. As these are cases in which a Toltec house or wing has been built on to a Maya structure, but no example of the reverse process, it is clear that the Mexican style is later than the Maya. There are also cases of stones in Maya style being re-used in Mexican buildings; for example, part of a Maya hieroglyphic stone lintel was recarved to serve as the tail of that typical Toltec feature, a feathered-serpent column, but the reverse is unknown. There is, accordingly, incontrovertible evidence that Mexican architecture is later at Chichen Itza than the Maya style, and therefore its introduction dates sometime after A.D. 889 or perhaps 909, the latest dates associated with Maya architecture.

From various sources we learn that the Itza, who were foreigners and spoke broken Maya, settled at Chichen Itza in the twenty years between A.D. 967 and A.D. 987 (Katun 4 Ahau in the Maya calendar), and we also learn that Kukulcan, "the feathered [or quetzal] serpent", who was a Mexican leader, seized Chichen Itza. Bishop Landa, our best Spanish source on Maya life, says, "The Indians are of the opinion that with the Itza who settled Chichen Itza there reigned a great lord called Cuculcan [Kukulcan] . . . and they say that he entered from the west, and they differ as to whether he entered before or after the Itza, or with them." As, however, a Maya prophecy speaks of both Kukulcan and the Itza coming again to Chichen Itza in a katun 4 Ahau, and as in Maya opinion history always repeated itself, we can feel fairly sure that Kukulcan was the leader of the Itza invasion which seized Chichen Itza in the Maya katun 4 Ahau which ended in A.D. 987, and introduced Toltec religion, Toltec architecture, and Toltec art.

The problem remains who was Kukulcan and who were the Itza. Kukulcan (*Kukul*, feather or quetzal; *can*, snake) is the Maya form of the Mexican Quetzalcoatl (*Quetzal*, the quetzal bird, the feathers of which were valued highly in ancient Middle America; *coatl*, snake). Quetzalcoatl was a ruler of Tula who was subsequently deified as god of the planet Venus and as a god of vegetation.

Driven out of Tula by the machinations of his rival, the god Tezcatlipoca, he made his way to southern Veracruz or Tabasco, and embarking on a raft, was lost to view. According to another version, on reaching the sea he made a pyre and cremated himself on it. Then, eight days later (the period of invisibility at inferior conjunction), he reappeared as the planet Venus at heliacal rising. Owing to the abbreviated method of dating used in central Mexico, the date of the expulsion of Quetzalcoatl is not certain, but Mexican archæologists tend to favour A.D. 978 or a few years later.

That certainly rings the Maya bell (Katun 4 Ahau corresponding to A.D. 967-987), but before we become too sure, it is well to recollect that Quetzalcoatl was also the title of the Mexican high priest, and Quetzalcoatl seems to be as frequent in Mexican history as Cecils in English public life. It seems almost too good to be true that the historical Quetzalcoatl and his Toltec followers, fleeing Tula, conquered Chichen Itza. Moreover, other parts of the Maya area have traditions concerning the arrival of Quetzalcoatl.

Aside from the problem of the identity of Kukulcan, there is the mystery of who were the Itza. Were they Toltec followers of Quetzalcoatl-Kukulcan, or were they some other group, perhaps even a Maya people from Tabasco, such as the Chontal, who had adopted the Quetzalcoatl cult and Toltec culture? At least, Itza seems to be an old Maya name, for it is recorded for regions far from Yucatan. The terms "foreigners" and "those who speak our language brokenly" could well refer to a Chontal Maya group. On the other hand, they must have been thoroughly Toltecized if they were originally Maya, for we read in a Maya account (the Book of Chilam Balam of Chumayel) that Itza emblems were the bird, the flat precious stone, and the jaguar. The bird and the jaguar were the emblems of the warriors of Tula and of the warriors depicted on the walls and columns of buildings of the Mexican Period at Chichen Itza (Fig. 8*b*, page 103).

This last is, I think, excellent evidence for identifying the Itza as the rulers of Chichen Itza during the Mexican Period; the innumerable symbols of the feathered serpent (Figs. 9*a*, *c*, *d*, page 109; 10*b*, page 121) are equally good evidence for associating Quetzalcoatl-Kukulcan with their rule. As, however, there seem to be certain non-Toltec elements introduced from the Mexican area about that time—I have mentioned phallicism and the little dwarfs with distended stomachs—it seems preferable to use the

wider term "Mexican" to denote this period and culture rather than the more restricted "Toltec".

The Itza occupation of Chichen Itza lasted for two centuries (i.e., from *circa* A.D. 987 to *circa* A.D. 1185) according to the Maya chronicles; it profoundly altered the Maya way of life. How much territory was ruled by Chichen Itza at that time is not known; native sources speak of the whole country's being under the domination of Chichen Itza, but Toltec art and architecture is not widespread outside the capital. We read of the Itza conquest of cities such as Izamal and Mayapan. Maya sources speak also of a triple alliance between Chichen Itza, Mayapan, and Uxmal, which lasted for the 200 years (A.D. 987-1185) of Itza rule at Chichen Itza. Yet archæology shows that Uxmal was deserted during the greater part of those two centuries and Mayapan was of little importance.

This is an interesting example of how archæology can be used to check Maya accounts, which, as they have come down to us, are not too reliable. A good deal of Maya history was incorporated in prophecies because of the Maya belief that what happened in a certain twenty-year period (the *katun*) would repeat when that twenty years repeated. Each *katun* bore the name and number of the day on which it ended. On account of the construction of the Maya calendar, the *katun* had to end on the day Ahau, and as the attached numbers ran 1-13, a day such as 4 Ahau would repeat as the closing day and therefore the name of a *katun* after 260 Maya vague years (actually $256\frac{1}{2}$ of our years because this type of Maya year—the *tun*—consisted of only 360 days). Again, because of the construction of the Maya calendar, the number attached to the day Ahau which ended each successive *katun* dropped by two, so that the *katuns* were named in this sequence: 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau (1 plus 13 minus 2 equals 12), 10 Ahau, 8 Ahau, 6 Ahau, 4 Ahau, 2 Ahau, 13 Ahau, and after that the count started again with 11 Ahau.

Eighteenth-century Maya antiquaries, trying to write the history of their people at a time when all the old knowledge was passing away, sought to disentangle these references to events which fell in certain *katuns* and to restore the events to their proper sequence. It is as though in the year A.D. 2500, with nearly all knowledge of European and American history lost, someone tried to reconstruct it from a couple of notebooks which contained abbreviated entries such as: Battle of Waterloo, '15; Surrender at Yorktown, '81; Defeat of the Armada, '88; Lincoln assassinated,

'65; Fall of the Bastille, '89; Kaiser flees to Holland, '18; Battle of New Orleans, '14.

The historian might well decide that the surrender at Yorktown and the defeat of the Armada fell in the same century, the seventeenth, and, linking the Kaiser's flight to Holland with the Battle of Waterloo, place both events in the twentieth century, whereas the battle of New Orleans he might associate with the French and accordingly place it in the eighteenth century. The Maya antiquarians of the eighteenth century had the same problem, save that instead of having to figure out the century, they had to place events in cycles of 260 years. Their answers were not always right. The triple alliance, if such ever existed, probably fell not in the eleventh and twelfth centuries, where they placed it, but in the eighth and ninth, late in the Classic Period, when Uxmal flourished; or else the alliance did start when the Itza conquered Chichen Itza, but lasted only a few decades, not two centuries. Only those arrangements will meet the archæological evidence that Uxmal was abandoned in the tenth century or very shortly thereafter.

The Mexican invaders introduced new religious cults, the most important of which was the worship of Quetzalcoatl-Kukulcan, the feathered-serpent god. Everywhere on these new buildings is displayed the feathered snake, its plumed body terminating at one extremity in exaggerated head with open jaws ready to strike, at the other end the warning rattles of the rattlesnake (Plates 8c, 14c; Figs. 9a, c, d, page 109; Fig. 10b, page 121). Plumed serpents writhe on low-relief sculpture, the focus of lines of warriors who pay their god homage; they descend on balustrades which flank steep staircases; they rise behind warriors or priests performing human sacrifice; with head on ground and tail in air they serve as columns in triple doorways; in pairs they pugnaciously face one another with open jaws across cornices of altars, or in more friendly fashion intertwine their bodies to form guilloches reminiscent of Jacobean furniture. The repetition is excessive and monotonous; one is reminded of those Hitler youth rallies with their unending *heils* and swastikas, save that the Chichen artists were not so unimaginative. At Tula the feathered serpent is equally dominant. Feathered serpents are rare in the art of the Classic Period of the Central area, but there are one or two outstanding examples at Copan, which, most significantly, were carved just before the abandonment of that city (Fig. 9, page 109).



a



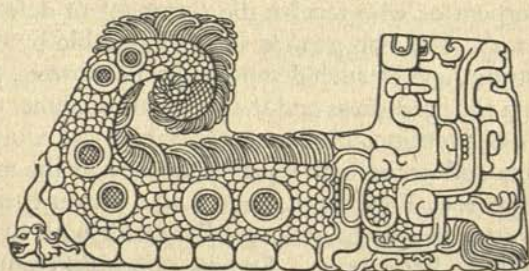
b



c



d



e

FIG. 9.—Serpents.

All are feathered except *b* (Classic Period, Yaxchilan). *e*, one of the rare feathered serpents of the Classic Period (Copan, about A.D. 800). *a*, *c*, *d*, Mexican Period, Chichen Itza (about A.D. 1100); note rattles. In the scene of human sacrifice (from a mural) the victim rests on a coil in the snake's body. His arms and legs are held by attendants; the priest is about to cut out the heart. The warrior in *c* is a typical Toltec Itza.

At that, the treatment is entirely different from that customary at Tula and Chichen Itza, and one may doubt that they represent the same concept. Other gods came to Chichen Itza from Tula. Tezcatlipoca, the all-powerful deity who overthrew Quetzalcoatl, is there, but with a far less formidable role; Tlalchitonatiuh, "sun at the horizon", god of the warrior cult, had considerable prestige, to judge by the number of times he is represented (Fig. 10c, page 121); and Chicomecoatl, "seven snake", a corn goddess, is represented, as in Veracruz, as a headless figure from whose neck seven snakes radiate fanwise. There are, too, representations of the Mexican rain gods, the Tlalocs, but these foreign gods were unable to displace their well-loved Maya counterparts, the Chacs. A Mexican sun god peers earthward from countless solar discs and an earth-monster of Tula origin displaces his less stereotyped Maya cousin.

With these manifestations of a new religion, aggressive militarism is intimately associated. We have already discussed the rise of warfare as the servant of a distorted religion; it remains to note its impact on Maya civilization, for which the best evidence is the art of Mexican Chichen Itza.

In sculpture and mural one finds line upon line of proud warriors, who face toward an altar where sacrifice is made to the feathered serpent or who receive the surrender of defeated Maya (Plates 8c, 14c). The two groups are recognizable by differences in their costume, and by such details as spear-throwers, the identifying bird on the head-dress and the pectoral or helmet ornament, seemingly a conventionalized butterfly, which are worn only by the Mexicans and occur with equal frequency in the art of Tula (Fig. 9c, page 109; Figs. 8a, b, page 103). From every side of countless square temple columns a tall warrior with his weapons gazes vacantly to left or right. Despite minor differences in costume, all look as though they came from the same mould; one almost expects to turn round and find Kruschev taking the salute before Lenin's tomb. We are no longer dealing with a theocracy, but with a society in which the soldier dominates the priest who had called him into being.

That is not all. On friezes around pyramids and platforms jaguars, pumas, and eagles, symbolizing the military orders, offer the hearts of sacrificial victims to Tlalchitonatiuh, the rising sun (Figs. 10b, c, page 121), and walls carved with lines of human skulls impaled on poles grimly recall that Mexican barbarity, the

tzompantli, "the skull rack", on which the heads of sacrificial victims were placed to the honour of blood-thirsting gods and the glory of the warrior caste. It is, indeed, a sad change from the Classic Period, when the current of life flowed more gently.

That these ideas were foreign is demonstrated by the fact that Mexican terms for some of them were adopted by the Maya, presumably because the Maya lacked words for such concepts foreign to their culture. These borrowed words throw light on the new social organization introduced under inspiration from Tula.

With the shift from a theocracy to one in which lay influence, with a strongly militaristic cast, was dominant, we find the following words of Mexican derivation: *tepal* or *tepual*, "lord", and *macehual*, "common people"; *tecpan*, "large community structure" or "royal palace"; *tenamitl*, "fortified or walled town"; *tepen*, "greatness", "glory".

Now it is obvious that the Maya had rulers long before the Mexican transformation, but, in view of the other terms introduced, we are justified in assuming that the change in rulership was sufficiently marked to necessitate a new word to describe it. The adoption of the term *tecpan*, which describes both a community structure and storehouse for weapons and also the residence of the ruler, as well as the newly adopted words for "fortified town" and "glory", similarly mark the shift from the old pacific and essentially introvert position of moderation to the militaristic and extrovert attitude of the belligerent Mexicans.

Even in words for weapons we can see some new introduction, for the Maya took over Mexican names for "shield" and "banner". They had, of course, shields before the Mexicans arrived and a Maya name for them, so it is probable that the Mexican term refers to some new type of shield introduced by the invaders. The term for "banner" almost certainly refers to the little flags the Mexican warrior wore on his back when he went into action, a custom unknown to the Maya of the Classic Period. The Maya also took over the Mexican name for a tight-fitting sleeveless jacket which was sometimes worn by fighters, and they borrowed Mexican armour, a thick-quilted garment of cotton, which was so efficient against native weapons that it was used later by the Spaniards.

In the highlands of Guatemala there was a marked shift after the close of the Classic Period from open ceremonial centres to easily defended sites, such as hilltops or tongues of land

surrounded on two or three sides by deep ravines. The same thing happened in the Northern area. For instance, Mayapan, which was to become the capital of Yucatan after the decline of Chichen Itza, is surrounded by a massive stone wall, now in a bad state of collapse, which has a circuit of over five miles and six main gate-ways.

Tulum, on the east coast of Yucatan and an important city after the Mexican invasions of Yucatan, has a wall on the land side, enclosing the city on three sides for a distance of nearly 800 yards, the fourth being protected by cliff. The walls are ten to fifteen feet high and as much as twenty feet thick, and are pierced by five narrow gateways. These are much better preserved than the ones at Mayapan, and some were clearly made with an eye to defence. In one case the doorway leading to the narrow passage is only four feet high, so that an attacker had to stoop to enter the passage and, coming from daylight into semi-darkness, would clearly be at considerable disadvantage. Xelha and Ichpaahun, also on the east coast, are similarly defended by stout walls, and both were of importance after the Mexican invasion. It is not certain when these walls were built around Yucatec cities; they may date from the time when Mayapan was dominant. The absence of a city wall at Chichen Itza supports this view. The process of militarization, then, would have been lengthy, with walls of stone a late consequence of much earlier changes in the pattern of life. "The evil that men do lives after them."

We know from early Spanish accounts that some Maya cities were on islands in lakes and that others were surrounded by palisades. One Maya town was protected by a living wall of maguay. Cortes, on his famous march, passed several fortified Maya towns in north-western Peten, one of which he described as follows: "The town is situated upon a lofty rock, having a great lake on one side and on the other a deep stream which empties into the lake; there is but one accessible entrance, and all is surrounded by a deep moat behind which there is a palisade, breast high; and beyond this palisade there is an enclosure of very thick planks, two fathoms high, with loopholes at all points from which to shoot arrows; its watch towers rise seven or eight feet higher than the said wall which was also provided with towers, on the top of which were many stones with which to fight from above." (MacNutt translation.) It is interesting to recall that at Tulum there are small temples at the corners of the walls, from the flat roofs of which the walls could be defended.

In 1934 a Carnegie Institution expedition, under the leadership of Karl Ruppert, discovered in south-eastern Campeche a fair-sized Maya city, named Becan, which was surrounded with an artificial moat. This varied in width from ten to over eighty feet and in depth from seven to thirteen feet, and was spanned by seven stone causeways either ten or fifteen feet wide. In his report Ruppert notes that there is some evidence that the moat may never have been finished.

Becan is a counterthrust to the argument I have been developing that large-scale warfare and fortifications are due to Mexican influences, for the recognizable architecture at Becan is of the Rio Bec type which surely flourished in the second half of the Classic Period. It is, of course, possible that the moat was added at a later date or that some buildings, now collapsed, may have belonged to the Mexican Period (Toltec-type buildings at Chichen Itza have structural faults which caused most of them to collapse), but it is rather more probable that the moat was built at the very end of the Classic Period when influences from Mexico were already beginning to make themselves felt, for there are slight grounds for supposing that north-eastern Peten and adjacent parts were the last stronghold of the hierarchy. The possibility that the moat was never completed (its bottom in one part is some sixteen feet higher than where the moat joins a swamp, the probable source of water; some of the causeways are still solid so that water could not circulate from one section to another) lends support to the thesis that this was a last project of the Classic Period never completed because of the overthrow of the hierarchy which had initiated the work.

The picture we have, then, is of a complete reorientation of life. Alien gods and an alien ruling class impose a new way of life on the Maya of Yucatan and of the Guatemala highlands; the old agricultural life of the peasant continues as before, but now supports new masters who, from regarding warfare as a means to an end, have inevitably found that the means are far more important than the end; warriors organize to serve the gods, but the latter in turn become patrons of warfare.

If the theory that the peasants overthrew the old theocracy because of the burdens it imposed on them is true, we can rest assured that the revolt did them no good; the new rulers set them to work to build new buildings to the honour of the new gods and to the glory of their followers. The chastisement shifted from whips to scorpions.

Parts of Yucatan which did not come under foreign rule were forced to adopt militarism in order to survive. Only the Central area seems to have been generally unaffected by the change, because, apparently, the region was too isolated to invite conquest. There, in the apparent absence of a strong ruling caste, construction of cities seems to have ended. However, as we have noted, the country was not unpopulated. In British Honduras, where archæological activity and modern road-building have been more intensive than in other parts of the core of the Central area, some evidence of a later occupation has come to light: finds of metal (unknown during the Classic Period), types of pottery vessels and figurines which are subsequent to the great abandonment, and at Santa Rita, in the extreme north of the colony, brilliant murals with marked Mexican influence.

We have vivid accounts of Maya reactions to their conquerors, for these, somewhat garbled and partly made to apply also to their Spanish conquerors, survive in the native Maya books, called the books of Chilam Balam. The Maya were particularly shocked by erotic practices introduced by the Itza, apparently as part of the cult of Quetzalcoatl-Kukulcan. One passage (translation by Ralph Roys) refers to the Itza in these words: "Their hearts are submerged in sin. Their hearts are dead in their carnal sins. They are frequent backsliders, the principal ones who spread sin, Nacxit Xuchit in the carnal sin of his companions, the two-day rulers. . . . They are the unrestrained lewd ones of the day, the unrestrained lewd ones of the night, the rogues of the world. They twist their necks, they wink their eyes, they slaver at the mouth, at the rulers of the land, lord. Behold, when they come, there is no truth in the words of the foreigners to the land. They tell very solemn and mysterious things, the sons of the men of seven-deserted buildings, the offspring of the women of seven-deserted buildings." *Nacxit* is a name for Quetzalcoatl-Kukulcan. In fact, elsewhere in these books he is called Nacxit Kukulcan in a passage which refers to him as ruler of Chichen Itza and speaks of the introduction of violence and of sin.

An old song which probably refers to the coming of the Mexican invaders, but may relate to a later incident, is given in the Book of Chilam Balam of Chumayel. Parts of it, as translated by Roys, read: "A tender boy was I at Chichen, when the evil man, the master of the army, came to seize the land. Woe! At Chichen Itza heresy was favoured. *Yulu uayano*. Ho! 1 Imix was the day when

the ruler was seized at Chikin Ch'en. . . . We were like tame animals to Mizcit Ahau. An end comes to his roguery. Behold, so I remember my song. Heresy was favoured. *Yulu uayano! Eya!* I die, he said, because of the town festival. *Eya!* I shall come, he said, because of the destruction of the town. . . ."

The italicized words are probably Mexican exclamations. *Mizcit* is almost surely the Mexican *mizquitl*, the mesquite bush. A man with that name should be from northern Mexico; mesquite, I believe, does not grow far south of the region of Tula. Heresy (the original word is a corruption of the Spanish term) must refer to the introduction of a new religion by the invaders; the word is used elsewhere to describe paganism.

The Mexican invaders evolved at Chichen Itza a new architecture. Basically it was the style of distant Tula, but the Maya corbelled vault was retained. The ritualistic needs of the Maya of the Classic Period had called for small narrow rooms which imposed an atmosphere of secrecy (Plate 8*b*; Fig. 5, page 77). One passed from a narrow outer room to an inner room, and then sometimes to another inner room or, as at Palenque, to an enclosed shrine in the second room (Fig. 4*c*, page 67). Dividing walls were added to rooms to make them smaller, or the doorway to an inner room was not in line with that of the outer room, so that light was deliberately cut off (Fig. 4*d, f*, page 67). These are calculated steps to attain privacy and seclusion; mediation between gods and men clearly did not require the presence of many priests within the sanctum. The Maya of the Puuc region had used columns in their outer doorways for perhaps two centuries before the Mexicans came to Chichen Itza, and a sort of colonnade had developed in cities of the Central area by decreasing the wall space between doorways until the remaining sections of wall had become wide piers. Nevertheless, they never placed columns or piers in the walls dividing an outer from an inner room, clearly because that would nullify the mystery of what went on in the inner room, not because they lacked the intelligence to repeat on the back wall of a room the piercing they had done on the front wall, or feared the extra weight a medial wall must sustain. Exceptionally, two inner rooms at Sayil have columned doorways. The outer rooms perhaps were added later.

Mexican religion, as practised at Tula and as introduced at Chichen Itza, clearly was less sacerdotal; the warriors as providers of sacrificial victims shared with the priests an intimacy with the

gods; the latter were no longer remote mediators between gods and men. There is a parallel, which must not be carried too far, to this development in the differences between Roman Catholic or Orthodox churches and those of advanced Protestantism. The sanctuary, with its screen or gates, or the separated monastic stalls, together with Lady chapel and side chapels, respond to functions of those churches which have priests; they disappear in Protestant churches where the priest is replaced by a pastor. Instead, we find a large uncompartmented interior dominated by a central pulpit in replacement of the sanctuary. The Classic Maya temple corresponds to the former interior; the Toltec temple to the latter.

The Mexican invaders achieved the spacious interiors they desired by replacing the interior walls of the Maya temple by lines of columns, on which were strung beams which in turn supported corbelled vaults (Plate 8*c*; Fig. 4*g*, page 67). Usually, short walls partly separated the inner part of the hall from the outer. The builders presumably did not expect their structures to last forever, and so they saw little objection to resting the vaults on wooden beams, usually of sapodilla, the hard wood which yields chicle, but the result was that in time the beams decayed, and the whole roof collapsed. There is not one building of this type of construction now standing at Chichen Itza, whereas several of the older buildings, erected in the old Maya style, are still intact. Atmospheric conditions surely affect the time a wooden beam will last in Central America; wooden lintels over a thousand years old have survived at Tikal, but at Palenque I have seen sapodilla beams, placed in position some twenty years ago, already decaying and ravaged by termites. That some of the beams in Mexican buildings decayed before Chichen Itza was abandoned is shown by sections of walls added in ancient times.

The civic or ritualistic needs of the Mexicans at Chichen Itza also called for long colonnades, which sometimes were independent of other buildings and sometimes stood before them. These were built on the same principle as the temples, in that spaciousness and light were achieved by replacing walls with columns on which beams rested. They stand on low platforms about six feet high and have back and side walls as well as short antæ on the front, almost surely added to brace the end walls, but the rest of the front is open (Plate 6*c*).

The north colonnade at Chichen Itza is the most grandiose of

these structures. The east end of it was apparently torn down in ancient times, and the part excavated by the Carnegie Institution is some two-thirds of the total length, which was in the neighbourhood of 425 feet. The interior width is forty-five feet, and the roof was formed of five parallel vaults, resting on five lines of columns and the back wall. A large area such as this would hold several hundred people, but except for one dais, in front of which was placed a statue of a reclining god of the type called Chacmol, there is no sign of religious usage (Plate 8c).

I am inclined to think such colonnades were primarily for lay functions, such as meetings of the members of the military orders of Jaguars and Eagles. I call them lay functions, but they were also religious, perhaps reflecting the religious origin of the orders, as in the case of the Knights Templar. In the case of this particular colonnade, its association with the military orders is, I think, proved by its sculptural decoration. The fronts of the antæ carried ornaments apparently depicting shields; the back of the platform carried a frieze of jaguars, eagles, pumas, and the like, offering human hearts to the rising sun (cf. Fig. 10c, page 121), symbolizing the purpose of the military orders named after those animals. Moreover, the dais or altar was carved with a procession of warriors, around which writhe feathered serpents, and more of those representations of Kukulcan adorn the balustrades of the staircase in front of the building. The frequent representations of these symbols of the fighting orders show the extent to which Mexican Chichen Itza was dominated by this military complex.

The same kind of temple with interior columns, the same long colonnades, the same processions of warriors with almost identical clothing and weapons, the same feathered serpents, and even the same statues of the recumbent god occur at distant Tula. The stone there is different, the carving is rather more crude, there are no masks of the Maya rain god, and the people of Tula did not use the corbelled vault, but in most other respects the two cultures are as alike as two peas.

Carvings in some of the buildings of Mexican Chichen Itza show victories over Maya neighbours (probably the greater part of Yucatan never was conquered by the Mexicans). Groups of dejected Maya, easily recognizable by their distinctive costumes and attributes (Fig. 8c, page 103), appear before their conquerors with left hand on right shoulder, sign for peace or surrender. Gold

discs dredged from the cenote of sacrifice at Chichen Itza again show the defeated Maya submissive before their Toltec conquerors.

Presumably the invaders were not sufficiently numerous to keep the area in subjection without local support, and of this there is some evidence in sculpture. It is to be doubted that the invaders made any effort to convert the peasants to the new worship, which may have been regarded as something exclusive and not to be shared with the lower-class natives. They did, however, accept old Maya deities—the masks of the rain gods on their buildings is evidence of that—and they seem to have accepted the old Maya priesthood, for indubitable Maya priests are carved and painted in their temples (the masks of the old Maya rain gods may have been given prominence to conciliate the conquered). It may be significant that in the Temple of the Chac Mool, which lay beneath the Temple of the Warriors, the figures carved on the columns of the outer room are Mexican warriors, while those on the columns of the inner room, or sanctuary, are priests, for the most part Maya (two or three of them do not show head deformation, a Maya practice, and therefore may be Mexicans despite certain Maya details).

The Maya, like the Chinese, seem to be able to absorb and re-define in terms of their own culture foreign ideas and foreign concepts. Just as they have Mayanized Christianity, blending it with native concepts, so they were able slowly to Mayanize their Mexican conquerors and the religion they introduced. There were obviously no limits to a people who in time seem to have identified a Protestant buccaneer as a reincarnation of Kukulcan come to restore liberty.

So far as we can tell, these Mexican or Mexicanized conquerors gradually became Yucatec Maya in speech and outlook, retaining only the boast of their descent from Mexican warriors. The same thing happened in the highlands of Guatemala, for at the time of the Spanish Conquest the ruling families of the Quiche and Cakchiquel were in every respect Maya save for their proud claim that their ancestors came from Tula. A somewhat similar fate overtook the Norman conquerors of England. Yet, these Itza, as well as the Xiu, who conquered the people of Uxmal shortly before (or after?) that city was abandoned and set up their capital city at nearby Mani, were still regarded as foreigners centuries later when the Spaniards arrived. The Maya books of Chilam

Balam disdain them as foreigners, as those who "speak our language brokenly".

The Itza, of course, gave their name to Chichen Itza (it means "at the rim of the well of the Itza"). The name of the city used before their arrival is not surely known, but it may have been Uuc-yabnal. This could be translated "seven great owners", and reminds one of the seven deserted buildings, from the women of which the Itza were descended. The invaders presumably married native women. Chichen Itza was famed as a centre of pilgrimage for hundreds of years. Indeed, surreptitious pilgrimages thither continued until some time after the Spanish Conquest.

The focal point of these pilgrimages was the sacred cenote, into which sacrifices, both of persons and valuables, were cast to propitiate the rain gods. When this cult began is not surely known. Some carved jades dredged from its muddy bottom are certainly of Classic workmanship. One, carved at Piedras Negras, bears a Maya date equivalent to A.D. 706, and a jade bead, almost surely carved at Palenque, bears a Maya date equivalent to A.D. 690. The problem is whether these jade objects were kept for several centuries as family heirlooms or as temple treasures and then thrown into the cenote, or whether the cenote cult was already active during the Classic Period. Personally, I am inclined to think it was in full swing before the Itza arrived, but received fresh impetus under the Itza. Sacrifice to large sheets of water was a widespread and ancient custom in America, yet it may be significant that the Classic Maya buildings at Chichen Itza are farther away from the cenote than those of the Mexican period.

The sacred cenote (there is another at Chichen Itza which supplied the city with water and, in later centuries, archæologists with a bathing pool) is about 200 feet in diameter, the level of the water is about sixty-five feet below the surface of the ground, and its depth is about seventy feet. A Maya road connects the great court on which stands the temple of Kukulcan (usually called the *Castillo*) with the cenote. However, I have suspected that this causeway may be older than the great court, and excavation might show that it passed beneath the court to join one of the causeways on the far side. The ruined foundations of a temple stand at the edge of the cenote, and it was almost certainly from here that the sacrifices were thrown in.

Dredging of the cenote by Edward Thompson brought to light

large quantities of offerings. These include huge quantities of jade, in most cases deliberately smashed, gold discs, copper bells, copper soles for sandals, wooden spear-throwers, idols and labrets of the same material, balls of copal incense, into some of which jades had been pressed, while others had a core of rubber, idols shaped from copal and rubber, pieces of textiles and basketry, as well as skulls and bones.

Spanish accounts tell of virgins being cast into the well, a detail which has caught the public imagination. Lurid pictures of fair damsels plunging into the pool are common. Actually, of the identifiable remains, thirteen are of men; twenty-one of children ranging in age from eighteen months to twelve years, and of these half were under six years old. Only eight are of women, seven of them over twenty-one, past the normal age of marriage.

The percentage of children was probably far greater than the 50 per cent of the identified remains because children's skulls are more easily broken than those of adults. This high percentage is understandable, as throughout ancient America where human sacrifice was common, children were offered to the rain gods, and the cenote cult was dedicated to the rain gods.

It seems to me most plausible to suppose that the Mexicans chose Chichen Itza as their principal city because the cenote cult had already given the centre renown throughout Yucatan. There must have been some attraction which caused the Mexicans to pick distant Chichen Itza rather than one of the larger Puuc cities, and I think it was the cenote cult.

The Mexicans also settled at Cozumel, Izamal, Motul, and Mayapan, according to various sources. It is, I think, highly significant that Cozumel was the shrine of the moon goddess, Ixchel, which also drew pilgrims from all parts of the country. Landa compares the pilgrimages to Chichen Itza and Cozumel with the Christian pilgrimages to Rome and Jerusalem. Furthermore, Izamal, as the home of Kinichkakmo, a manifestation of the sun god, and of Itzamna, one of the greatest of Maya gods, was also a most important shrine. To these places came immense concourses of pilgrims, many of them from quite distant parts. As Itzamna and Ixchel were purely Maya deities, it is logical to suppose that these pilgrimages were in full swing long before the Mexicans came on the scene. Indeed, Izamal's architecture shows that its greatest period fell in early Classic times. Thus the Itza controlled the three greatest religious shrines in Yucatan of which



a



b



c

FIG. 10.—Elements of Mexican Religion at Chichen Itza. All date from A.D. 1000 to A.D. 1200.

a: The four Bacabs, set at the four sides of the world to hold up the sky. Each wears his insignia—a turtle shell, a spider web, and two kinds of shell. They wear special loincloths and are usually bearded. From columns in the Castillo.

b: Scene of Itza sacrifice to the sun god, who emerges from the jaws of a rattlesnake. The victim is held by four youthful chacs. They, the high priest, and attendants (some omitted in this drawing) wear Toltec costume. Almost surely a sacrifice of the orders of Jaguars and Eagles. From a gold disk recovered from the sacred cenote.

c: Warriors, in guise of eagle and jaguar, symbols of the Toltec military orders, offer hearts of sacrificial victims to Tlalchitonatuh, the Mexican god of the rising sun. From frieze, Temple of the Warriors.

we have knowledge, and all dedicated to the most important gods of the Maya pantheon. Their conquest must have been deliberate, the outcome of a policy. By seizing these three shrines of the old faith and the old regime, the Itza could keep a tight control over the old Maya priesthood, and at the same time gain the prestige and the revenue of the pilgrim traffic; by accepting the old Maya gods, they could, perhaps, conciliate the Maya peasant.

According to native sources, Chichen Itza, Mayapan, and Uxmal together ruled Yucatan during the two centuries (A.D. 987-1185) of which we are speaking. This statement is hard to credit. As already noted, Uxmal had surely been abandoned by the middle of the eleventh century, at the latest, and Mayapan is of little importance before the twelfth century. There had been an earlier city at or near the site of Mayapan, for its buildings became a quarry of finely dressed stone of Puuc style for the late comers to Mayapan, but not a single building of that earlier city survives. The various carved stelæ at Mayapan probably came from the earlier city, but, unfortunately, none can be dated with certainty.

All three cities, accordingly, were dominant at different times. Perhaps their names indicate an alliance of the political groups in control of the three regions.

After two hundred years, war put an end to the alliance. Choosing again between conflicting versions, I think the explanation given below best fits the facts, although quite different reconstructions have not a little in their favour, and in the opinion of some students the incidents now to be related should be brought forward another two and a half centuries.

The central character in this turning point in Maya history was a certain Hunac Ceel, also called Cauich. His first appearance on the Maya—or perhaps we should say Maya-Mexican—stage was at that most dramatic moment, a sacrifice to the rain gods at the sacred cenote of Chichen Itza. It was customary to draw out at midday anyone still alive or one of several victims still alive (the old accounts are not too clear about this), and the rescued victim then gave a message from the rain gods as to whether the year would be one of rain or drought. Hunac Ceel Cauich was present at one of these sacrifices, and when no victim survived to bring back the prophecy, he dived into the well to get it himself. The dramatic story is given in Maya in the Book of Chilam Balam of Chumayel, and, as translated by Ralph Roys, reads:

"Then those who were to be thrown arrived; then they began

to throw them into the well that their prophecy might be heard by their rulers. Their prophecy did not come [i.e., all were drowned]. It was Cauich, Hunac Ceel, Cauich was the name of the man there, who put out his head at the opening of the well on the south side [the sacrificial temple stood on the south rim]. Then he began to take it. Then he came forth to declare the prophecy. Then began the taking of the prophecy. Then began his prophecy. Then they began to declare him ruler. Then he was set in the seat of the rulers by them. Then they began to declare him head-chief. He was not the ruler formerly."

Hunac Ceel, as Roys has remarked, was "evidently of the stuff of which rulers are made, a man with sufficient courage and force of character to shape his own destiny". He was head-chief of Mayapan, of which city, one suspects, he was a native, perhaps the son of a chief of that town. Evidently he became head-chief of both cities, and proceeded to make Mayapan the principal city in the alliance. A certain Chac Xib Chac was the ruler of Chichen Itza, and if, as seems to be the case, this incident is subsequent to Hunac Ceel's plunge into the sacred cenote, we must assume that he governed Chichen Itza for Hunac Ceel. The ruler of Chichen Itza, presumably Chac Xib Chac, stole the bride of Ah Ulil, the head-chief of Izamal, during the wedding festivities, and because of this, Hunac Ceel, supported by a group of Mexicans, drove the ruler of Chichen Itza and his followers from the city.

This Maya version of the Helen of Troy theme refers to the treachery of Hunac Ceel, but of what precisely this treachery consisted we do not know. Did Hunac Ceel side with Izamal against his own subordinate, or, by appearing to support Chac Xib Chac, did he manoeuvre so that a split occurred between Chichen Itza and Izamal, and then throw his support to Izamal, perhaps the weaker of the two? We can only speculate, but it does not seem unreasonable to suppose that Hunac Ceel doubted the loyalty of Chichen Itza and, fearing that his subordinate there was plotting with Izamal to overthrow him, smashed that potential threat by some fancy double-crossing. Whatever actually happened, Chac Xib Chac was "trampled upon", as the Maya book puts it, and the Itza were driven from Chichen Itza. Izamal disappears from history at the same time. Hunac Ceel, having disposed of Chichen Itza with the aid of the brideless ruler of Izamal, turned on his ally, and defeated him, apparently in the determination to eliminate all rivals. There is a laconic and obscure statement that the sons or

son of holy Izamal were given in tribute "to feed and nourish Hapay Can". Hapay Can, "sucking snake", is the name of a Maya deity, and as sacrificial victims nourished the gods, one can be reasonably sure that Izamal had to supply sacrificial victims, presumably because of its defeat, to nourish this god.

CENTRALIZED GOVERNMENT AT MAYAPAN

With the defeat of the Itza group at Chichen Itza and the apparent elimination of the Itza group in control of Izamal, Hunac Ceel and the Itza of Mayapan appear to have gained complete control of northern Yucatan, and probably of the once populous Puuc region as well, although the ceremonial centres of that region had long been abandoned.

For the next two and a half centuries (approximately A.D. 1200-1450), Mayapan controlled Yucatan, both politically and, through its domination of Chichen Itza and Izamal, in religious matters. The rulers of Mayapan kept a tight control of Yucatan by the simple expedient of making the head-chiefs of the various city-states reside in Mayapan. The emphasis was definitely on centralized government, and the head-chiefs can have had no encouragement to advocate states' rights. At this same time powerful rulers in Western Europe had a similar policy, customarily retaining the sons of rulers as hostages for the good behaviour of subordinate or rival kingdoms.

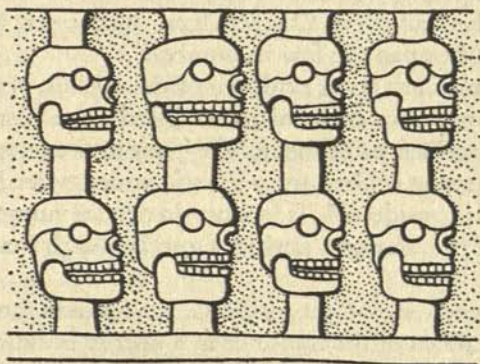
How many Maya states were controlled by Mayapan at this time (approximately A.D. 1200-1450) is not certain, for we do not know the exact boundaries of Mayapan's rule, but the number was probably just about one dozen, roughly the area of Scotland north of the Edinburgh-Glasgow line and south of the Moray Firth, but one must think of this region with its fifteenth-century communications, not as they are today.

The ruins of Mayapan are extensive. Mention has already been made of the great wall which surrounds the city, and within which, according to Bishop Landa, the head-chiefs of the states had their residences. A careful map made in 1950-51 by Morris Jones of the United States Geological Survey reveals the remains of some 3,600 structures, the vast majority of which are rather clearly residential. Indeed, there are very few buildings which can be regarded as definitely religious in function. Most of the latter form a small ceremonial centre surrounded by residential mounds.

Even if one assumes that not all the structures were in use at the same time, a conservative estimate would place the population as not less than ten thousand.

Here, then, we have a remarkable shift from the old ceremonial centre, never permanently inhabited, to regular populated cities.

This, of course, marks the next and inevitable stage in the change from a fairly peaceful theocracy to a warlike lay autocracy. Once a state decides to live by the sword and to rule its neighbours with the sword, it must seek to increase and concentrate its population to carry out that policy, and there must be a shift from a predominantly agricultural economy. In this connection it may well be significant that Mayapan is situated in a most infertile region



and the city is literally built on rock. Rock-ledge covers the surface everywhere, and pockets of soil are rare. The surrounding country is largely of the same nature, and no honest farming community would deliberately choose such territory for settlement.

The group that made Mayapan the capital clearly did not have a farmer's outlook. To them the richness of the soil was not of great consequence because they expected to get their bread not by the sweat of their own brows but by that of their tributaries. Intimidate your neighbours by the might of your military organization, and you can be assured of plenty in return for a minimum of effort. This seemingly rose-strewn path has been travelled countless times by militaristically organized groups and by aggressive dictatorships in the course of world history, but always the roses show their thorns, the trail becomes worse and leads sooner or later to the abyss. Power corrupts and weakens its holders; every culture and every dictatorship must live by the sweat of its brow if it

is to survive, for that is its essential sacrifice. The Mayapan regime was no exception.

Mexican Chichen Itza had marked a decided falling off from the artistic attainments of the Classic Period, and the almost complete absence of hieroglyphic tests during that period is evidence that there was an intellectual retrogression. The showy, but unstable, architecture of Mexican Chichen Itza is yet another indication of the deterioration in values which accompanied the militaristic order. There is an even sharper decline in the arts with the rise of Mayapan. The temple of Kukulcan at Mayapan, although it stands on a fairly large pyramid, is a doll's-size reproduction of that at Chichen Itza and probably lacked a vaulted roof; the round temple, now a mass of rubble, similarly cannot have held a candle to the Caracol at Chichen Itza. Moreover, the religious buildings at Mayapan are few in number.

Three features are good evidence of the decline of religion and the rising importance of secularism. Firstly, the best masonry is found in the residences of the nobility, not in the temples. Beautifully dressed stone robbed from the site which preceded Mayapan is reused with considerable frequency in private homes, but crude stonework of the Mayapan period is good enough for many of the temples.

Secondly, each important residence has its own family oratory, either in one room of the house or in a nearby building. There is archaeological and literary evidence that these shrines were primarily for ancestral cults and for the worship of deities who had gained the devotion of the family. These private cults flourished at the expense of organized communal religion.

Thirdly, Mayapan's temples and shrines are strewn with the fragments of large incense burners. These are of coarse, highly porous pottery, and up to eighteen inches tall. Each has in relief on its front the full-length figure of a god painted in brilliant colours after firing. The heads, arms, legs, and feet were made in separate moulds. They were assembled before firing, and small details to indicate the costume or attributes of the required god—many of these also cast in moulds—were added. For example, faces came without teeth from the mould, but it was a simple matter to add in appliqué a tooth at each corner to indicate an aged god. Sometimes, if the facial characteristics were unusual, for instance in representations of the god Xipe, a special mould was used. This is, of course, mass production and the assembly

line, so one can say that Mayapan anticipated Henry Ford's contribution to modern civilization by some six centuries. Technically, the process was a step forward, but æsthetically, it was outrageous. In spite of their brilliant colours, they are lifeless and instantly bring to mind the psalmist's words, "Eyes have they, yet they see not; ears have they, yet they hear not." Religion had sunk low when the idols of the principal gods of the community could be treated in that off-hand manner.

In view of the great concentration of power at Mayapan, with labour presumably available from the subordinate states, the paucity of temples there is surely significant. It wasn't that the rulers of Mayapan could not erect a grand ceremonial group, but, rather, that they were not interested in doing so. Religion had lost its predominant place in the culture; warfare introduced to bring man closer to his gods had become the master. The Itza had journeyed far through time and space to learn that the end never justifies the means, but is itself warped and shaped by them. The Spaniards in their relations to the Maya were to repeat that mistake in the sixteenth century. Indeed, the same false doctrine has been embraced over and over again down the centuries, and has countless followers to this day, particularly east of the Oder.

The architecture of Mayapan reveals a sad degeneration from that of Mexican Chichen Itza. The tile-like veneer of the Temple of the Warriors, the great ball court, the Temple of Kukulcan, and other buildings of the great Mexican period at Chichen Itza—which at an earlier period was used at Mayapan itself—is unknown in the period of Mayapan's dominance. Instead, undressed rough blocks of stone were everywhere used. They are unbelievably crude, and would make one think of developmental stages in stone architecture were it not known that they represent decadence. The Mayapan masons covered up these stone chunks with heavy overlays of stucco to produce whitened sepulchres, like heavy make-up to hide wrinkles.

There are many short colonnades at Mayapan, for the most part crude and puny imitations of the colonnades at Chichen Itza, but, unlike those of the great period at Chichen Itza, they are often not attached to any temple, but stand alone. The column drums in those buildings at Chichen Itza are carefully cut, whether they are round or square; at Mayapan they are pieces of rocks of varying height roughly pecked to an approximation of roundness. Imagine seven or eight gladioli corms stacked one on top of the

other, and you have a Mayapan column in miniature. The spaces between the uneven drums were filled with small rocks, spalls, and mortar, and the application of a thick coating of stucco hid the transgressions, but it was jerry-building of the worst kind.

The colonnades, unlike those of the early Mexican period at Chichen Itza, lacked corbelled vaulting. In some cases the roofs appear to have been of mortar laid over a flat wooden roof; in others, judging by the paucity of debris in the collapsed buildings, thatching was probably used. The function of these smallish colonnades is conjectural; they may have been buildings for civil administration or perhaps shrines for the clans or even for the "hostages" from the subjugated states.

Recent excavations, particularly of burials, by the Carnegie Institution of Washington at Mayapan have underlined the cultural impoverishment of this militaristic regime. Whereas important burials of the Classic Period normally yield jade ornaments, fine polychrome or modelled pottery, and other evidence of a command of and appreciation for beautiful objects, few burials yet found at Mayapan contain any possessions except fragments of coarse monochrome vessels or of crude and showy incense burners. On the other hand, the burial rites of Mayapan chiefs seem to have called for the slaughter of huge numbers of human beings. In one case the skeletal remains of forty-one persons were tightly packed in a vertical shaft which led to a cavern beneath the pyramid, an arrangement reminiscent of the hidden crypt at Palenque. In the cavern were the bones of a man and woman, presumably an important chief and his wife, accompanied by only a few potsherds of poor quality and huge piles of bird and animal bones.

There were few beautiful objects in fourteenth-century Mayapan, but obviously something better than a few crude sherds could have been supplied had it been desired. Possibly the animals and birds had been deposited as food offerings in lacquered gourds, and of them no trace would remain; but were that the case, why the handful of coarse sherds? It is difficult to avoid the conclusion that values had been so distorted that wholesale slaughter of slaves or captives to supply the dead chief with a retinue of retainers in the next world and an extravagant provision of food had come to be considered more important than furnishing objects of beauty for enjoyment in the after-life. In Classic times the sacrifice of slaves was not unknown, but the barbaric scale of

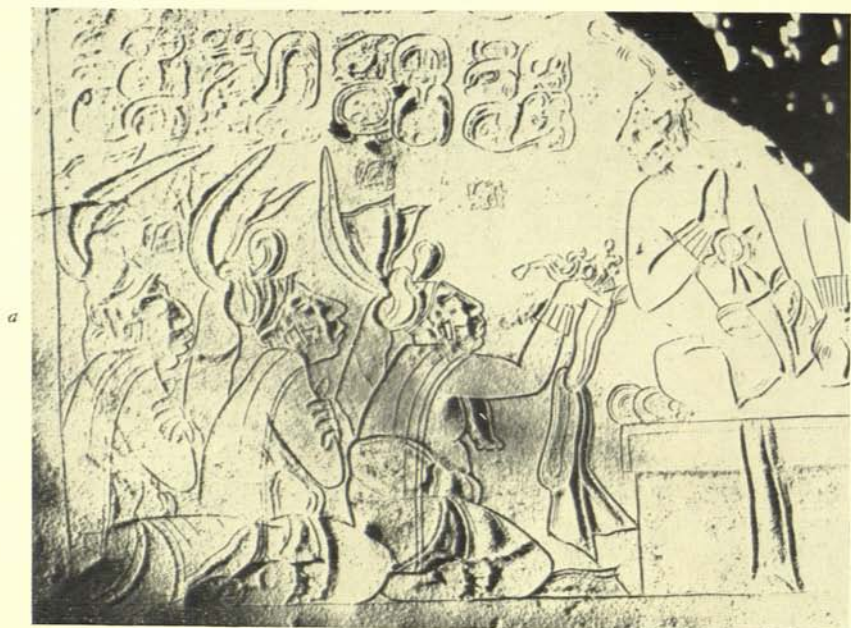


a



b

a: Stela 13, Piedras Negras, A.D. 771. (Courtesy University Museum, Philadelphia.) *b*: Stela 10, Seibal, A.D. 849. Erected some sixty years before the collapse of the Classic Period, it displays late mannerisms and incipient decadence. Both personages wear short skirts of jaguar skin. (Courtesy Peabody Museum, Harvard University.)



a: Incised panel, Bonampak, showing offerings to personage on dais. Style is early, perhaps about A.D. 600. *b*: Part of Stela 40, Piedras Negras, A.D. 746. The maize god scatters corn. Note maize head-dress and seed bag in left hand. *c*: Part of Stela 51, Calakmul, A.D. 731.



a



b

a: Stela H, Copan, A.D. 731. An approach to sculpture in the round. *b:* Stela F, Quirigua, A.D. 761, height twenty-four feet. Note treatment of plumage on side, shield, and elaborate sandal heels. (Courtesy British Museum.)



a: Kneeling person makes blood offering. The cord, set with thorns, is passed through a hole in his tongue. The blood spatters on paper in the basket. Note diagonal effect produced by spear and glyph panels countering the kneeler. *b*: Kneeling person offers vessel with blood-spattered paper to god emerging from the jaws of the serpent. Both lintels from the same building, about A.D. 750. (*Photographs courtesy British Museum.*)

PLATE 12.—Sculpture: Lintels from Yaxchilan.



a



b

a: Top of Lintel 26, Yaxchilan. Person on right holds jaguar head. Note head deformation, typical Maya eye, receding chin, and jacket of man on left, A.D. 720. (*Photograph by Giles G. Healey.*) *b*: Part of design on lid of newly discovered sarcophagus, Temple of the Inscriptions, Palenque, probably A.D. 692. Reclining or falling figure on the head-dress of a terrestrial monster. Behind rises the base of a world-directional tree with grotesque face on it. Note elongated hand and foot. (*Photograph by Don Leonard.*)



a



b



c

a: Back of a dais or altar, Piedras Negras. The design represents the head of a dragon monster with human figures looking out of the eye sockets, A.D. 786. (Courtesy University Museum, Philadelphia.) b: Stela, Yaxchilan. (Courtesy Peabody Museum, Harvard University.) c: Dais or altar, Mercado, Chichen Itza, Mexican Period, about A.D. 1150 (cf. Plate 8c).



a



b

a: Dancing figures on Stela 9, Oxkintok, Yucatan. A regional style, A.D. 849. b: Classic Maya profile, Ruz Tabler, Palenque, about A.D. 725. (Courtesy Instituto Nacional de Antropología e Historia, Mexico.)



a



b



c



d

a: Stucco head. Classic type of beauty. Palenque, about A.D. 700. (Courtesy Instituto Nacional de Antropología e Historia, Mexico.) b: Grotesque head, Copan, about A.D. 800. c: Facade ornament, Chichen Itza. Head in snake's jaws. Mexican Period, about A.D. 1150. d: Figure carved in mother of pearl. Found at Tula, Hidalgo, whither it must have been exported as an antique. About A.D. 850. (Courtesy Chicago Natural History Museum.)

this execution is more in keeping with a Wagnerian theme than with the old Maya tradition of moderation in all things; appreciation of the beautiful had yielded to unrestrained ostentation.

The Itza group had been expelled from Chichen Itza, but their city was not entirely abandoned. On the outskirts there are numbers of small colonnades very similar to late ones at Mayapan, but rarity of Mayapan-period pottery at Chichen probably invalidates a post-Itza dating of them. Chichen Itza never regained its former power, although the sacred cenote continued to draw pilgrims until the Spaniards suppressed the cult.

There is much evidence of a hand-to-mouth existence at Chichen Itza in those 300 years between the expulsion of the Itza group by Hunac Ceel and the coming of the Spaniards. Buildings fell into semi-ruin and were abandoned or shored up with emergency walls. In a corner of one colonnade a small makeshift room had been constructed, and built into the crude walls were sculptured stones robbed from the façade of the building and even from the dais or altar! Clearly these last dwellers at Chichen Itza had little interest in the glory of their predecessors. As already noted, the east end of the great colonnade which flanks the south side of the Temple of the Warriors was without much doubt torn down at this time, and the stones in all probability were used to build mean little buildings, of which over fifty are scattered haphazard in the adjacent court, for these contain many re-used column drums.

There is evidence that the decay of Chichen Itza must have started almost as soon as Hunac Ceel triumphed. In debris formed by the partial collapse of the round tower called the Caracol was found intact a vessel of the ware called plumbate which had obviously been deposited after the building had started to fall. Plumbate pottery was carried in trade all over Middle America during the eleventh and twelfth centuries, but early in the thirteenth century its export and probably its manufacture ceased. We can, therefore, be reasonably certain that buildings at Chichen were falling into ruin about A.D. 1200, which is approximately the date of Hunac Ceel's conquest of the city. The scarcity of potsherds of the post-Itza period proves that there was no large-scale or continuous re-occupation of the city.

There was, as we have seen, a marked retrogression in the arts and in architecture during the two and a half centuries of Mayapan's domination; but, in compensation, there was brisk trade

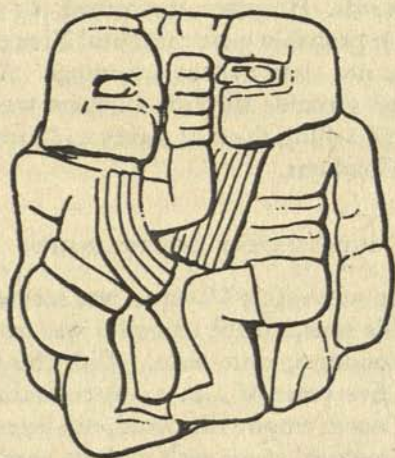
and advances in material culture, a situation comparable to that of Victorian Age with the coexistence of Pre-Raphaelitism, Mansard roofs, and Victorian furniture with inventions and material prosperity.

The most important of these advances was in metallurgy. Metal-working almost certainly originated in Peru and spread northwards. The art had reached lower Central America by the ninth century, but the Maya of the Classic Period were unacquainted with the process. Despite intensive excavation at such centres as Uaxactun no metal has ever been found in association with objects of the Classic Period or of coeval cultures of Mexico except for two tiny fragments of gold-copper alloy found beneath a stela at Copan. Copan is the Maya city nearest the metal cultures of Panama and Costa Rica, and it is reasonable to suppose that on that account the people of Copan may have been the first to acquire traded examples of this decided novelty. Indeed, the two fragments—hollow legs of a figure—are probably of Panamanian manufacture, and it is quite possible that they were brought to Copan after the city was abandoned.

Shortly before the Itza gained control of Chichen Itza—that is to say, about the middle of the tenth century—metal appears in Mexico, although still rare. During the Itza domination of Chichen Itza, metal, in the form of gold-copper alloy and copper, becomes more plentiful. This is proved by the fact that objects of metal from the cenote include discs with designs showing Itza victories over their Maya neighbours. As there is no source of metal in Yucatan, it is clear that the Itza made these from imported metal, almost certainly working the designs in *repoussé* on plain discs brought from Panama. Even at that time metal was not too common. Copper bells have been found with a burial beneath that typical Mexican building, the Temple of the High Priest's grave. During the period of Mayapan's dominance metal objects became less rare, and they included a useful tool—copper or bronze axes—but even by the time of the Spanish Conquest metal was not really common in Yucatan.

Turquoise, rated almost as valuable as jade, and excellently made beads of rock crystal are innovations. They appear for the first time in a burial in the High Priest's grave, but one, shown by the accompanying pottery to have been made after the fall of Chichen Itza, presumably to allow Itza exiles to rest in their ancestral capital.

The bow and arrow, certainly the most radical of the innovations, appeared in the Maya lowlands during the domination of Mayapan, introduced by Mexican mercenaries in the pay of the rulers of that city. This weapon probably reached the New World from Asia, but for some reason diffused slowly southwards. It is not pictured in the many representations of Mexican warriors at Chichen Itza, but once accepted by the Maya, it came into general use for both hunting and warfare. In fact, it may have led to a decrease in certain varieties of game, for prior to its introduction, the Maya had depended on traps and spears (clay pellets shot from blowguns were used against small birds) for their supply of game.



Sooner of later centralized dictatorships fall and the militaristic super-state dissolves into its component parts. Power corrupts and produces mental sluggishness. The descendants of Hunac Ceel, with the family name of Cocom (the name of a climbing plant with yellow flowers), maintained themselves in power for some 250 years (approximately A.D. 1200-1450) by their system of centralized government with the head-chiefs of states in residence at Mayapan. Presumably states dared not revolt with their leaders held as permanent hostages. Moreover, the Cocom consolidated their "empire" by matrimonial alliances with the ruling families of subordinate states. No state by itself could overthrow the Cocoms, since the latter, in addition to their own men, had the support of a considerable body of Mexican mercenaries.

The Mexicans were, and still are, tougher and more warlike than the gentle and pacific Maya, but as time passed, those Mexicans had been Mayanized, as had the Itza before them, and they had probably grown soft. They were known as *Ab Canul*, a Maya word which signifies protector—"bodyguard" might be a fair translation in terms of our culture.

The revolt against the Cocombs was engineered by a certain Ah Xupan, who belonged to the important Tutul Xiu family, also claiming Tula ancestry. The Tutul Xius claimed to have been the rulers of Uxmal, but there is good archæological evidence that Uxmal was abandoned before the Tutul Xius, who apparently were also of Mexican descent, appeared on the scene, or, at least, very soon afterwards. However, the ruined city was within their territory, and that probably gave the Tutul Xius extra prestige, of which they were not slow to take advantage. Ah Xupan urged the revolt on the grounds that the Cocombs were seizing many Yucatec Maya and selling them as slaves to "foreigners", that is, to Mexico and Honduras.

INDEPENDENT CHIEFTAINSHIPS

The revolt was successful; Mayapan was sacked and the ruling Cocom and all his sons, except one who was away on a trading expedition to Honduras, were slain. With the fall of Mayapan (within four or five years of A.D. 1450) centralized government ended, and the Cocom empire dissolved into its component parts, the dozen or so regional states each with its head-chief. There is archæological evidence pointing to the sack of Mayapan. Large quantities of charcoal and fragments of charred beams were strewn over the floor and imbedded in the debris of one large residential building recently excavated at Mayapan. Because of the almost fireproof qualities of the beam-and-mortar roof, one can be fairly certain that the fire was not accidental. Looters had broken into altars in search of offertory caches, and smashed incense-burners were scattered everywhere. Most dramatic was the finding of seven skeletons, apparently flung down on the floor in front of a building so that they lay alternately head to foot. Large flint blades were in the rib-cases of two of the individuals, and another blade rested against the pelvis of a third. One cannot say positively that these seven died in the battle, but it is a distinct possibility.

The end of Mayapan's hegemony accelerated the cultural decline which had continued almost uninterruptedly since the end of the Classic Period. Religious influence, which had grown less through those centuries, sank to a new low. Pyramids were no longer constructed; stone temples gave place to thatched huts. Perhaps indicative of this decline is the possibility that the ancient ball game ceased to be played. Although in Toltec Chichen Itza at least six courts were in use, not a single court has been identified in all the length and breadth of Mayapan, and there is no account of the game's being played in Yucatan at the time of the conquest (Landa, with his full account of Maya life, makes no mention of it).

Archæological remains at the capitals of the various states which succeeded Mayapan are meagre in the extreme. Ancient pyramids and stone temples in the vicinity may have been used by some towns, but we read of annual repairing and refurbishing of the temples, indicating that for the most part they were of wattle and thatch. The construction of wide, carefully surfaced roads seems to have ceased at the close of the early Mexican Period, or, not improbably, earlier still, at the end of the Classic Period. Just as Roman roads continued to be used for centuries, so these ancient Maya roads were still travelled by pilgrims to the great shrines, such as Izamal, but they probably were not kept in repair. However, intra-city roads continued to be built, for there is one in Mayapan less than 400 yards long, constructed during the period of Mayapan's domination.

Constant warfare between the states which inherited the Cocom "Empire" prevented any attempt to arrest the cultural decline. There are parallels between this situation and the cultural decline and internecine warfare of England after the Roman withdrawal. Maya culture for several centuries had lived by the sword with its attendant cultural retrogression. Now it was perishing of the same disease.

A remarkable parallel to this sequence is discernible in the history of the highlands of Guatemala at the same period. There, at the close of the Classic Period, militarism, probably introduced by groups also influenced by Tula, radically affected the local civilization. After a time, as in Yucatan, one group became dominant and imposed its rule on its neighbours. This was the Quiche, living to the north of Lake Atitlan, whose chiefs likewise boasted descent from ruling families of Tula, although, like those in Yucatan

claiming Mexican ancestry, they had become completely Maya in outlook and speech. They, too, imposed the cult of Quetzalcoatl, the feathered serpent, on the conquered Maya.

For some time the Quiche seem to have been overlords of their neighbours, the Cakchiquel, the Zutuhil, and parts, at least, of Mam territory. They and the Cakchiquel expanded southwards from their highland homes into the foothills and coastal belt of the Pacific at a time when the two nations seem to have been allies. The Cakchiquel conquered territory to the south-east at the expense of the Pipil, a Mexican group long established there; the Quiche took over territory to the south-west at the expense of the Zutuhil and probably the Mam. These conquests were of great economic consequence, for they involved some of the land best suited to cacao cultivation in the whole Maya area. It was the Maya equivalent of conquest of a region of extensive gold-mining. Later, the incipient Quiche empire, beset by revolts, collapsed at about the same time as Cocom Mayapan fell. There followed an intensification of intertribal warfare, which, as in Yucatan, ended only with the coming of the white man.

The Spaniards, under the infamous Alvarado, subdued Guatemala in 1525; the final conquest of Yucatan took place sixteen years later. In both regions Maya betrayed their fellows. In Guatemala the Cakchiquel fought with the Spaniards against their old enemies, the Quiche and Zutuhil; in Yucatan, the Tutul Xius, who had won the everlasting enmity of the Cocombs for the betrayal at Mayapan, threw in their lot with the Spaniards. The same thing happened in Mexico, where the powerful Tlaxcalan joined Cortes in fighting the Aztec. Clearly there was no feeling of racial solidarity in Middle America, and there was also a failure to foresee that by such actions the Indians were hastening the day of their own enslavement. The Spanish Conquest was inevitable, but it would have been delayed, especially in the case of Mexico, except for native aid. Perhaps these betrayals were ignoble clamberings aboard the band-wagon (the Tlaxcalan won some privileges for their aid), but there were to be no seats or even holds for them in the Spanish coach of state.

The Peten and north-eastern Chiapas, core of the Central area, were not conquered by the new rulers for another 150 years because of the impenetrability of the forest and lack of natural resources of interest to Colonial Spain. At Tayasal, a small island in Lake Peten, in the heart of this country, had settled the remnants

of the Itza driven from Chichen Itza, and there in their isolation they retained their independence and their old ways until their conquest in 1697.

It is interesting to reflect that many of the thirteen colonies had struck deep roots before this last Maya citadel fell. The temple-topped pyramids of Maya tradition yet reared themselves heavily from the earth of the tropics at a time when graceful steeples were rising, with the yeast of Wren's inspiration, in a more temperate climate to the north. Maya priests were not a whit less austere than their fellow clerics in New England.

Moreover, there is a bond between hanging witches and human sacrifice, for both were performed for the supposed good of the community at the expense of the individual. If anything, the Maya position was a shade more ethical: witches were the victims of hysteria, whereas humans sacrificed by the Maya died in an orderly manner to keep man's bargain with the gods.

Unfortunately, no one who participated in this conquest of Tayasal has left any detailed account of life in this Maya fossil. Curiously enough, there is a record of a red-headed man, married to an Itza woman, living in Tayasal just before its conquest. He had a book with him—the Bible?—and in all probability was an Englishman from the old buccaneer settlement of Belize. When one recalls that the writing of books on native life was for long a leading British occupation, one regrets that this sojourner among the Itza never returned to civilization to indulge in the national pastime; his observations would have been of inestimable importance.

This picture of the last six centuries of Maya history is somewhat disheartening. It is the story of a series of declines in art, architecture, and religion, due primarily to the deviation into militarism. Jane Austen, in *Sense and Sensibility*, gave the only civilized verdict on such developments: "I have more pleasure in a snug farmhouse than a watch-tower . . . and a troop of tidy, happy villagers please me better than the finest banditti in the world."

The Maya, as has been pointed out, had the ability to absorb their foreign conquerors and to modify to their own taste new concepts forced on them. By the time of the Spanish Conquest the cult of Quetzalcoatl had almost ceased, and among present-day Maya, who still worship the old Maya rain gods, there is no recollection of that deity, or of other importations from Tula, such as

Tlalchitonatiuh and Tezcatlipoca. The military orders of Jaguars and Eagles are not mentioned by Spanish eye-witnesses of Maya culture. It is for this reason that I have called this second Mexican period in Maya history the period of Mexican absorption. Yet warfare flourished to the end despite the generally pacific attitude of the Maya. There must have been just enough Mexican blood in the ruling families to resist that last stage in Mayanization; they never learned that "the paths of glory lead but to the grave".

Why there was no revival in the arts is hard to say—Greece has its Byzantine revival and Italy its long renaissance with Canaletto and Tiepolo (born respectively the year of the fall of Tayasal and the year before) as its last fruits. Warfare does not account for this lack of a rebirth, for art development can coexist with intensive military campaigns. Except for the weaving and embroidery of textiles in the Guatemala highlands and one or two minor handicrafts, art has not smiled again on the present-day Maya. This divorce from beauty does not seem to be due to Spanish domination, for the independent Lacandon Maya and the semi-independent Maya of Quintana Roo are still less artistically inclined. Perhaps the answer is that after the Classic Period the Maya never recovered an enthusiastic faith to bring into being a revival of their old brilliancy.

In conclusion, I would again point out that in details this brief sketch of Maya history may not be correct, for there are alternative arrangements, particularly in the dates of the principal events in the history of Chichen Itza, and we still do not know what was happening in other cities of Yucatan during the Itza domination of Chichen Itza. As long as that problem is unsolved, no reconstruction of Maya history can be certain. However, the melancholy picture of decline and fall is correct in its main outline whatever reconstruction is accepted. Once Maya civilization was forced to use the wrong means to placate the gods, the end was inevitable.

In this and the previous chapters we have followed the poorly marked path of Maya civilization along its stages: the Formative Period, its prenatal existence (perhaps 500 B.C. to approximately A.D. 350); the Classic Period, its growth and its glory (approximately A.D. 350-900); the Mexican Period, its submergence beneath Mexican-Toltec domination and the rising tide of warfare (A.D. 1000-1200); the Period of Mexican absorption, its transformation into small-scale universal states and the gradual re-

assertion of Maya values (A.D. 1200-1450); and a final sub-phase of Balkanization among the weak successor states to centralized government, which ended with the Spanish conquest (A.D. 1450-1540). It is a steep rise, a lengthy section of plateau, and then a down gradient which grows precipitous as the end comes in sight.

IV. Intellectual and Artistic Achievement



A man with a deep sense of continuity sees himself not as an accidental unit doomed to vanish in a few years but as one of a great procession, influenced and helped by those who have gone before him, responsible in his turn for giving help and encouragement to those who will come after.—Robert Gordon Menzies, *Character and Training*.

CHARACTER AND TRAINING

IN THE first chapter were given the results of a kind of poll on the character—psychological traits—of the present-day Maya of Yucatan. This, in brief, revealed the Maya to be exceptionally honest, good-natured, clean, tidy, and socially inclined. In my own opinion, the lowland Maya could also be described as deeply religious. They take pride in their work, especially in the care of their fields, but there is no marked desire to get ahead, or even to keep up with the Joneses. That trait, I think, stems from a characteristic feature of the Maya outlook on life, the attitude of live and let live. No one, they feel, should strive for more than his fair share, for that can be attained only at one's neighbour's expense; consideration for others is all important.

This attitude applies not only to one's fellow-man, but even to animals. A hunter should shoot only what he needs; he should not slaughter game indiscriminately, an attitude inculcated in folktales and embodied in prayers. The hunter asks the gods of hunting to send him what he requires, and usually points out that he is in need of the food; *otzilen*, "I am poor or afflicted," is the term he uses, but as money plays only a small part in Maya economy, the expression really means that he needs food. There is also a realization that if hunters indulge in wholesale slaughter, the entire community will be the loser because game will become scarce; it is a

kind of voluntary enforcement of game laws. In contrast, the Spanish-speaking *chicleros* have no such restraint or thought for the future. I have seen a *chiclero* cut down a wild cherry tree to get a few handfuls of fruit, rather than climb the tree. The punishment of the indiscriminate slaughterer is brought out in folk-tales, the recital of which teaches the moral code of the group to the young. The hunting gods have servants who care for wounded animals; the bee god is at hand to mend the wings and legs of bees damaged when men break into the hive to get the honey. The hunter apologizes to the deer he has shot for taking his life and, as in his prayer, concludes with the word *otzilen*, "I had need."

Nevertheless, the Maya in practice is not kind to animals—kindness to animals is a rare feature of civilization—and more than half starves his dog so that he will be a good hunter. Rather, I think, his attitude comes from the ingrained conception that one should not take advantage of others, whether human or animal.

The Maya apologizes to the gods of the earth when he cuts the forest to make his cornfield, burns the dry brush in the clearing, and disfigures the landscape. A prayer of this type collected in southern British Honduras reads in part: "O God, my mother, my father, Lord of the Hills and Valleys, Spirit of the Forests, be patient with me for I am about to do as I have always done. Now I make my offering to you that you may know that I am troubling your good will, but suffer it, I pray. I am going to dirty you [destroy your beauty]. I am going to work you that I may live." There is beauty in this apology for disfiguring the land, but the essential point is that justification has to be offered for destroying vegetation and for "disfiguring the face of the earth god", as one prayer has it. The earth and all vegetation are living sentient beings.

This constant endeavour to be fair-minded comes out in the incident given in the day in the life of a hunter in Chapter V below, in which the Maya chief strives not only to see both sides of the case he is trying, but also to make each party see the other's point of view. It is based on actual observation in a Maya village in southern British Honduras. The Maya trying the case was more interested in an amicable settlement of the case and in making sure that both plaintiff and defendant saw each other's point of view. His approach seemed an epitome of the whole Maya attitude of reasonableness and restraint.

Maya philosophy is best summarized in the motto, "Nothing

in excess", which was inscribed over the temple of Delphi. Harmonious living, moderation, and a full comprehension of that spirit of toleration for the foibles of one's neighbours contained in the expression "live and let live" characterize the present-day Maya. The development of a somewhat similar philosophy has been considered one of the great achievements of Athenian culture, and rightly has been put before material progress.

The surviving books of Chilam Balam reveal unconsciously that the preceding paragraph not only applies to the present-day lowland Maya, but also summarizes Maya outlook in the past. This is particularly apparent in descriptions of the two occasions when the Maya felt the impact of alien ideas and ways of living: first, when they were conquered by the militaristically minded Itza; second, when the imposition of Spanish rule required tremendous physical adjustment. Both conquests were accompanied by great bloodshed and cruelty, but it is highly significant that it was the disappearance of harmonious living, not the temporary slaughter and cruelty, which impressed itself on the Maya to such an extent that generations later it was still a major theme in the books of Chilam Balam. One passage contrasting life before and after the Itza conquest in the Book of Chilam Balam of Chumayel has been translated by Ralph Roys as follows:

In due measure did they recite the good prayers; in due measure they sought the lucky days, until they saw the good stars enter into their reign: Then they kept watch while the reign of the good stars began. Then everything was good. Then they adhered to the dictates of their reason; in the holy faith their lives were passed. Then there was no sickness. . . . At that time the course of humanity was orderly. The foreigners [the Itza] made it otherwise when they arrived here. They brought shameful things when they came. They lost their innocence in carnal sin. . . . This was the cause of our sickness also. There were no more lucky days for us; we had no sound judgment. At the end of our loss of vision and of our shame everything shall be revealed. There was no great teacher, no great speaker, no supreme priest when the change of rulers occurred at their arrival. Lewd were the priests. . . .

The mention of carnal sin and lewdness refers to certain erotic practices introduced by the Mexicans which were the very oppo-

site of the Maya concept of purificatory rites before interceding with the gods. The Maya clearly attributed the subsequent outbreaks of sickness and general disaster to these erotic practices imposed by the conquerors. Maya contempt for these orgies of the Itza, so contrary to the whole Maya spirit of moderation and decorum, is brought out in one passage from the same source already quoted (p. 114). Another of a similar character but even more forceful reads in the Roys translation: "They twist their necks, they twist their mouths, they wink the eye, they slaver at at the mouth, at men, women, chiefs, justices, presiding officers . . . everybody, both great and small. There is no great teaching. Heaven and earth are truly lost to them; they have lost all shame . . . understanding is lost; wisdom is lost. . . Dissolute is the speech, dissolute the face of the rogue to the rulers, to the head chiefs."

Absence of sound judgment, of wisdom, and of orderliness are emphasized; blame for the lack of great teachers and men of vision is laid on the immoderate and shameful conduct of the Itza.

Of the changes resulting from the Spanish Conquest the Maya scribe writes:

Before the coming of the mighty men and Spaniards there was no robbery by violence, there was no greed and striking down one's fellow man in his blood, at the cost of the poor man, at the expense of the food of each and everyone. [And elsewhere] It was the beginning of tribute, the beginning of church dues, the beginning of strife with purse snatching, the beginning of strife with guns, the beginning of strife by trampling of people, the beginning of robbery with violence, the beginning of debts enforced by false testimony, the beginning of individual strife, a beginning of vexation.

There had been tribute before the Spaniards came, but it had not been onerous, and violence was not unknown, but what an indictment of our civilization! The early Spanish settlers in Yucatan exploited the natives who were allotted to them as tributaries and plantation labourers. The Franciscan friars could only partly alleviate the harsh conditions, and the Spanish crown, which was strongly opposed to exploitation, was too remote to check the rapacity of the settlers. Yet the Maya complaint is not primarily

directed against exploitation, but against violence, greed, and lack of consideration for others.

Maya character was also regulated by discipline aimed at teaching obedience and self-control. The German ethnologist, Karl Sapper, who lived for some years among the Kekchi Maya, remarks on the strictness with which Indian children are brought up. He notes that there is a consistency in their training and that discipline is not relaxed when the child is out of sorts or ill. The child impressed by the absolute obedience which his parents and the adults around him accord to a tribal elder finds it easier to submit to the control of his parents. Again, when he notices that conversation is largely carried on by the old people and that visitors are greeted in order according to their rank and age, he learns to follow the example of the young adults in remaining silent, to respect and obey his elders. He also learns to hide his emotions under an outward calm. Indeed, Indian children seldom cry.

In ancient times training must have been much more strict, particularly in the schools and seminaries. We know little about how these functioned in the Maya area, but, to judge from the full information on analogous institutions among the Aztec, the young men had a far from easy time, and the girls in their own educational establishment did not fare much better.

Discipline continued through life. Before great religious festivals and important stages in the agricultural year, such as cutting forest, burning, and sowing, there were periods of fasting and continence. These are still followed by the Maya, and, as it is believed that failure to adhere to the rules will bring misfortune to the whole group, the individual is strengthened in his group loyalty, which, in turn, fortifies him to fulfil his obligations. Generally the period of continence lasts thirteen days, a Maya "week", but before great festivals men in some parts of the Maya area moved into the men's houses for three, four, or five Maya "months" of twenty days each, and there fasted, drew blood from their bodies to offer in sacrifice, and abstained from washing. The Kekchi to this day maintains continence for forty days before the annual pilgrimage to a certain cave which is peculiarly sacred, and various forms of fasting were practised in all parts of the Maya area.

Another feature of Maya culture which helped to develop a sense of duty to neighbour and community was group labour. For clearing forest land, for building houses, and for other such activities the Maya worked, and still work, in teams of a dozen or

more. A helps B and C to clear their cornfields, and they return the service by helping him to prepare his land. A co-operative housebuilding for a young couple about to marry is described in Chapter V. We teach team spirit by means of sports; the Maya made it a feature of their lives.

Thus upbringing, the practice of self-restraint, co-operative work, and the inculcation of the spirit of moderation produced a tranquil Maya character which was essentially introvert, but of a disciplined rather than an individualistic nature. This character has, of course, moulded Maya civilization, and that civilization, once established, helped to keep the pattern before succeeding generations. Our knowledge of early Maya history lacks detail, but there are incidents which show this spirit at work:

As already noted, after the overthrow of Mayapan, the Ah Canul, the Mexican mercenaries who had sustained the power of the tyrannical Cocom, were not massacred—a not unusual fate in civilizations on or above the Maya level. They were not even expelled from the country, but were assigned territory in Yucatan in which to settle, and were accepted into the Maya family of chiefdoms, apparently on terms of trust and friendship.

Early in the seventeenth century two friars visited the still independent Itza of Tayasal. On a conducted tour of the city one of them on a sudden impulse smashed the chief idol in its temple and then exhorted the enraged Itza to accept Christianity. After resting in the guest house, the two friars visited the Itza head-chief and told him of the incident. He, of course, already knew all about it, but showed no outward sign of anger and did not once refer to the matter in the subsequent conversation. Far from suffering the death which in Maya eyes they must have merited for this sacrilege, the two friars were permitted to remain on the island and to say their daily masses in public. The only outward manifestations of anger were a refusal to supply the friars with men to accompany them when they finally departed and a shower of stones and some jeering as they set out. How many other people would have displayed equal moderation in those circumstances?

As we shall see, Maya character, with its emphasis on moderation, discipline, co-operation, patience, and consideration for others, made possible outstanding achievements in the intellectual field.

THE PHILOSOPHY OF TIME

So far as this general outlook on life is concerned, the great men of Athens would not have felt out of place in a gathering of Maya priests and rulers, but had the conversation turned on the subject of the philosophical aspects of time, the Athenians—or, for that matter, representatives of any of the great civilizations of history—would have been at sea. No other people in history has taken such an absorbing interest in time as did the Maya, and no other culture has ever developed a philosophy embracing such an unusual subject.

Time has been the subject of many similes and metaphors in the history of man. In our own civilization the most familiar symbol is that of Father Time with his scythe. He reminds us of the brevity of our span of life but fails to convey the idea of the eternity of time. A better picture is that of the poet which compares time to an ever-flowing stream, but the concept is narrowed to the experience of the individual when Isaac Watts conceives of this stream as bearing its sons away. These and other metaphors reflect the attitude toward time in our own culture; time is regarded not as an abstract, but rather according to its effect on us as individuals. It is as though we, the self-styled lords of creation, were surprised and a trifle offended at having to bow to the passing years.

For the Maya time was an all-consuming interest. Every stela and altar was erected to mark the passage of time and was dedicated at the end of a period. It is as though we set up a monument at the end of every five or ten years, and inscribed on it the date—Sunday, December 31, 1950; Saturday, December 31, 1960, etc.—together with information on the age of the moon and the gods then ruling. So far as we know, Maya hieroglyphic monuments—slightly over 1,000 with glyphic texts have so far been found—deal only with the passage of time, data on the moon and the planet Venus, calendrical calculations, and material on the gods and rituals involved in these matters. The texts in the three surviving hieroglyphic manuscripts are largely filled with divinatory almanacs giving information on the aspects of the gods of days, such as which are favourable or unfavourable for sowing crops or hunting. There are also passages on astronomical matters, but, again, with emphasis on the gods involved.

In Old World cultures the days may be under the influence of gods or planets—witness our own Saturn-day, Sun-day, Moon-day, etc. Among the Maya the days themselves were divine, and still are in remote villages of the highlands of Guatemala in which the old Maya calendar still survives. Each day is not merely influenced by some god; it is a god, or, rather, a pair of gods, for each day is a combination of number and name—1 Ik, 5 Imix, 13 Ahau, and so on—and both parts are gods. The Maya still speak of a day as “he”, and often prefix the masculine *ah* to the name to emphasize that the day is a living god. The personified days were vastly more important in the life of the Maya, from prince to peasant, and played a much greater part in shaping the culture than any astrological or divinatory mechanism of ancient Europe or the Near East.

The Maya conceived of the divisions of time as burdens carried through all eternity by relays of divine bearers. These bearers were the numbers by which the different periods were distinguished. The burdens were carried on the back, the weight supported by tump-lines across the forehead. In terms of our own calendar it is as though for December 31, 1956, there were five bearers: The god of number thirty-one with December on his back; the god of number one carries the millennium; the god of number nine bears the centuries; the god of number five, the decades; and the god of number six, the years. At the end of the day there is a momentary pause before the procession restarts, but in that moment the god of number one with the burden of January replaces the god of thirty-one with his December load, and the god of number seven relieves the god of number six as bearer of the year (Fig. 13, No. 42, page 163).

This theme appears in the most elaborate hieroglyphic inscriptions, which show the various gods of numbers at the moment the journey is done. One god raises his hand to the tump-line to slip it off his forehead, whereas others have slipped off their load, and hold them in their laps. The night god, who takes over when day is done, is in the act of rising with his load. With his left hand he eases the weight on the tump-line; with his right hand on the ground he steadies himself as he starts to rise. The artist conveys in the strain reflected in the god's features the physical effort of rising from the ground with his heavy load. It is the typical scene of the Indian carrier resuming his journey familiar to anyone who has visited the Guatemalan highlands.

The Maya transcriptions of the Colonial period bear out the picture supplied by the hieroglyphic texts, for they contain many references to this conception. We read of the bearers' letting fall their burdens of time; of tying on their burdens; of taking the road; of the resting-places, that is, the ends of periods; and of events happening during the journey of such-and-such a year. This imagery differs strikingly from any picture of time our civilization has produced, in that the passage of time is not portrayed as the journey of one bearer and his load, but of many bearers, each with his own division of time on his back. Mystically, too, the burden came to signify the expected good or ill fortune of the year according to the benevolent or malevolent aspect of the bearer god, and the priests were kept busy with the complex task of weighing the conflicting weal and woe of the various periods of time. The burden of one year was drought, of another a good harvest. The day with which a new year started was its bearer, and was called the year-bearer. Actually only four day-names could occupy that position. Thus if the year began with the day Kan, one could look forward to a good crop because Kan was merely an aspect of the maize god; if the day Muluc was the year-bearer, good crops would also be expected since Muluc was the rain god. On the contrary, the influences of the day gods Ix and Cauac were malevolent, so years which started with them would be disastrous.

A too literal acceptance of predestination will soon affect the welfare of the whole community, for there is not much point in sowing a large crop if drought is certain to destroy it. Moreover, priests soon expose themselves as poor prophets if they cannot hedge on their predictions, and they can hardly justify public support unless they claim the power to modify fate. Rites of expiation and hedging were inevitable, and the latter gave the priest every incentive to juggle with the influences of the many gods marching on the journey of time and to master astronomy for astrological ends; the more factors that could influence the predictions, the more complex the problem grew and the greater the dependence of the group on the priest's specialized knowledge. It was in the attempts to find a key to the conflicting influences of the gods of many cycles of time that the Maya had their greatest intellectual successes.

The search for the factors that influenced each day and each year was perhaps mundane; the Maya idea of the eternity of time was noble. In the Maya scheme the road over which time had

marched stretched into a past so distant that the mind of man cannot comprehend its remoteness. Yet the Maya undauntedly retraced that road seeking its starting point. A fresh view, leading farther backward, unfolded at the end of each stage; the mellowed centuries blended into millennia, and they into tens of thousands of years, as those tireless inquirers explored deeper and still deeper into the eternity of the past. For them time receded in endless vistas of hundreds of thousands of years; the resting-places, those annual stages of the bearers of the burden of time, mounted to millions and even scores of millions. In the introductory chapter I have already cited one inscription that probes 90,000,000 years into the past, and another which sweeps back some 400,000,000 years. The accompanying glyphs record that the starting point of those calculations were thousands of millions more years in the past. Indeed, we can feel rather confident that the Maya had concluded that time had no beginning.

Time, in the conception of the Maya, sweeps forward, too, but surviving calculations carry us only a paltry four millennia into the future. Evidently, future time was of less interest than time past, probably because the Maya were much more interested in the past than in the future on account of their belief that history repeats whenever the divine influences are in the same balance. Apparently, the Maya, like the Aztec, believed the world would come to a sudden end, presumably when an overpowering combination of evil influences marked the termination of a time period. If, therefore, the priest, by probing the past, could find precisely the same combination of evil influences that he knew was to mark the end of an approaching time period, he could be sure that, as they had not destroyed the world in the past, they would not now destroy it. In all probability, then, this great Maya conception of the eternity of time evolved from the dominance of superstition and astrology in Maya life.

The idea that, given the same influences, history would repeat itself had two interesting consequences: it tended to confound the future with the past, and it introduced a conception of cycles of time which partly conflicted with the imagery of time as an unending march by its bearers into the future.

The period of time which most concerned the Maya was the *katun*, a span of twenty *tuns* (approximate years, each 360 days). Because of the peculiar construction of the calendar, *katuns* could end only on the day *Ahau* (each was named by the day on which

it ended) and at each repetition the attached number decreased by two, so that the succession was 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau, 9 Ahau, 6 Ahau, 4 Ahau, 2 Ahau, and then 13 Ahau repeated. Thus a katun of a given name recorded every 260 tuns (approximate years; 257 of our years), and as the ruler of each katun wielded the same influences each time a katun returned, history was expected to repeat itself in cycles of 260 years. Accordingly, if the priest looked up what had occurred at previous appearances of a given katun, he had a picture of what would happen when that katun returned. Details would vary, but in broad outline events would follow the established pattern.

The Maya prophets were as pessimistic as Jeremiah; direful predictions vastly outnumbered those that were favourable. We find, for instance, the following: 13 Ahau, "There is no lucky day for us"; 11 Ahau, "Niggard is the katun; scanty are its rains . . . misery"; 7 Ahau, carnal sin, roguish rulers; 5 Ahau, "Harsh his face, harsh his tidings"; 10 Ahau, "Drought is the burden of the katun." For only three katuns were the prophecies good.

Katun 8 Ahau was a katun of fighting and political change; therefore, at every repetition of katun 8 Ahau such changes could be expected. An interesting example of this fatalism occurs in connection with the last days of Tayasal, the independent Itza chiefdom which held out against the Spaniards until 1697. Andrés de Avendaño, a Franciscan of outstanding ability who had mastered the intricacies of the Maya calendar, visited Tayasal in 1696 and in a conference with the Itza chieftains persuaded them that only four months were lacking to the time when, according to their ancient prophecies, they would accept Christianity and, of course, submit to the Spanish crown. Avendaño, who tells us that he was thoroughly acquainted with the old katun prophecies, clearly pointed out to the Itza that katun 8 Ahau, the katun of political change, was about to start, and the time for acceptance of Christianity had come. The Itza agreed to submit at the end of the four months lacking until the new katun began. As a matter of fact, Avendaño was about a year out in his calculation; katun 8 Ahau started in July, 1697; the defeat of the Itza and their submission to Spanish rule came four months before the start of the katun, in March, 1697. The Itza, who had a great reputation as warriors, put up very poor resistance. It is possible they did not fight well

because they knew resistance against the power of the incoming katun was useless.

The extraordinary feature, however, is that in these prophecies past and future become one. Spanish rule coalesces with the foreign yoke of the Itza; Christian worship introduced by the Spaniards is identified with the worship of Kukulcan, an alien cult imposed on the Maya 600 years earlier; and, apparently, the impact of an obscure pirate, who seems to have had a hide-out in north-eastern Yucatan, led to the identification of the Roman Catholic Church with the hated Itza, and of Protestantism with the old Maya religion. Present and future events blend with past history because they are really one, for both result from the same divine "burden" of the katun. The cross of Christendom is the tree, conventionalized in art as a cross decked with vegetation, on which the quetzal bird perched; the bearded Spaniards are the Toltec invaders because their leaders, too, were bearded; the house of Montejo, the conqueror, which stands on the south side of the great plaza in Merida, is the "house to the east" of katun 11 Ahau, during which Spanish rule was firmly imposed on Yucatan; and the measuring of the great cathedral of Merida raised by the Spaniards is mystically the measuring of time by the pacing of its bearers through eternity. I do not believe that any other people in history has evolved a similar conception of the compartmentalized identity of past, present, and future.

The divine bearers in relays carry time forward on its unending journey, but at the same time there is this cyclic aspect represented by the recurring spells of duty for each god in the succession of bearers. We might picture the course of the katuns as a giant track, the circuit of which requires 260 years, but the image would be only partly correct. The round of the katuns was only one of the very many cycles of time; every period larger than a day, together with the lunar month and the synodical revolutions of planets, as well as the groups of gods who ruled the sky, the earth, and the underworld, had their individual cycles. That is to say, all were members of relay teams marching through eternity. The Maya wished to know which gods would be marching together on any given day because with that information they could gauge the combined influences of all the marchers, offsetting the bad ones with the good in an involved computation of the fates and astrological factors. On a successful solution depended the fate of mankind.

I suspect the problem was in a secondary sense a challenge to the intellect—a sort of tremendous anagram which had a particular appeal to the Maya with his deep regard for orderliness. A comprehension of the harmony in the universe and its rulers was the key to methodical living.

The general problem that faced the Maya might be expressed in terms of our modern civilization in this way: In the speedometer of your motor car you have a mileage gauge, which also records tenths of a mile. Suppose you have installed also gauges which record the distance you drive in furlongs and chains, in kilometres, in Roman stadia, in Russian versts, in Spanish leagues, and other measures of distance. Now suppose only the mileage gauge is illuminated at night, and, furthermore, that you, a very superstitious driver, fear that you will be in danger if several of the dials show your unlucky number, five, at the same time. On the other hand, when the gauge registers a group of sevens, your luck is in. You must calculate when the fives will appear on the gauges during your night journey so that you can drive with great caution; and also discover when the sevens will be in position, so that you can speed to make up time lost during the dangerous period.

The problem that the Maya priest had to solve was along these lines, but considerably more difficult because some of the factors he used were tricky. Solar and lunar reckonings and the synodical revolutions of planets are not easily reduced to order or to round numbers. The tropical year is approximately 365.2422 days long; the lunation is slightly over 29.53 days; the synodical revolution of Venus is 583.92 days; the sidereal year is a shade under 365.2564 days. Such cycles had to be brought into relation with one another and, above all, into relation with the sacred divinatory almanac of 260 days. There were other Maya time counts which had to be taken into account: the tun, an approximate year of 360 days; the vague year of 365 days; the cycle of nine nights, over each of which in turn a god ruled; and a cycle of seven days, the components of which were probably ruled by earth gods. These were the Maya equivalents of the gauges on our modern car.

The Maya had no knowledge of handling fractions and they had no decimal system. Moreover, they did not use leap years, but made marginal calculations to take care of the discrepancies between counts of solar years and of their vague years of 365 days. Handling these figures, therefore, was a difficult business. That

was not all. Each lunar month in the series and each division of each revolution of the planet Venus had its divine patron, and the influences of all those gods had to be taken into consideration. The Maya priest-astronomer was anxious to find the lowest common multiple of two or more of these cycles, or, to state it in the Maya pattern of thought, how long would be the journey on the road of time before two or more of the divine carriers reached the same resting place together.

INTELLECTUAL ACHIEVEMENT

It was in the solution of these problems that the Maya had their most outstanding intellectual successes. It is an arid subject which cannot be presented without recourse to arithmetic and a little of the simplest astronomy, but if you will bear with me I am sure that you will applaud the Maya successes in the light of the obstacles they overcame with native perseverance and patience.

Without going too deeply into the subject, let us see how the Maya solved the problem of bringing the Venus cycle with its average length of 583.92 days into relation with the year and the 260-day cycle. Every Maya cycle had its re-entering point in terms of the 260-day cycle: that of the katuns was the day 13 Ahau; that of the moon, 12 Lamat; and that of the Venus calendar, the day 1 Ahau. That was *the* day of Venus, the resting point at the end of the great cyclic journey, the god most closely identified with the planet. Indeed, 1 Ahau was another name for the Venus god. It was the day of heliacal rising after inferior conjunction when Venus reappears as morning star.

After observing the heliacal risings of the planet for many years, the Maya almost surely concluded that the synodical revolution of Venus averaged 584 days. The next questions they wished to answer was how many synodical revolutions of the planet will there be before Venus will once more appear as morning star on the day 1 Ahau. We would find the highest common factor which is 4, divide that into one of the numbers, and multiply the other number by the result. The answer is 584 divided by 4 equals 146: 146 times 260 equals 37,960. The gods of the Venus and 260-day cycles therefore will reach the same resting place on the march of time after 37,960 days, which is 65 Venus revolutions and 146 rounds of 260 days. The Maya worked out the problem by a more involved system of multiplication tables. They also knew that this

was also the equivalent of 104 of their vague years of 365 days, so three of the marchers reached the resting place at the same time. However, things were not as simple as that.

As actually the synodical revolution of Venus averages not 584, but 583.92 days, an error of 5.2 days (0.8 times 65) will have accumulated after 65 revolutions calculated at 584 days; and when the resting place is reached, heliacal rising of Venus will not theoretically fall on 1 Ahau. (Theoretically because 584 days is the average length of the synodical revolution of the planet; in practice the revolution can vary from 580 to 588 days.) That wobble must have made it difficult for the Maya to realize that their figure of 584 was too great, and centuries of observation may have been needed before they approximated the required correction of 5 days in 65 revolutions of the planet. How to deduct those days was a problem, for if they subtracted 5 days from any of the formal positions of heliacal rising, they could not reach 1 Ahau as the new base; only the deduction of 4 days or a multiple thereof would lead back to 1 Ahau.

In the end they solved their problem very neatly by making a correction of 4 days at the end of the sixty-first Venus year. As the sixty-first Venus year would end on the day 5 Kan, 4 days after 1 Ahau, the subtraction of 4 days leads back to 1 Ahau (61 times 584 equals 35,624. 35,624 minus 4 equals 35,620 equals 137 times 260). The corrected Venus cycle and the 260-day almanac will now reach their resting place together after that interval, but the 365-day year is put out of step, for 35,620 is not divisible by 365. Moreover, the correction is of 4 days whereas it should be 5.

The Maya got round that difficulty again with great ingenuity. At every fifth cycle they made a correction of 8 days at the end of the fifty-seventh revolution, and that, too, led to the day 1 Ahau. That is to say, after 301 Venus revolutions they had made corrections amounting to 24 days (four corrections of 4 days and one of 8 days). Actually, the correction should have been 24.08 days.

An error of 0.08 day in the course of 481 years is a really great achievement. One must remember, too, the condition under which Maya astronomers worked. Early morning mist is frequent in the rain forest of the lowland Maya country and much cloudy weather is to be expected during the long rainy seasons. Knavish weather must have frustrated observation of heliacal risings time after time.

There are only five inferior conjunctions of Venus in eight

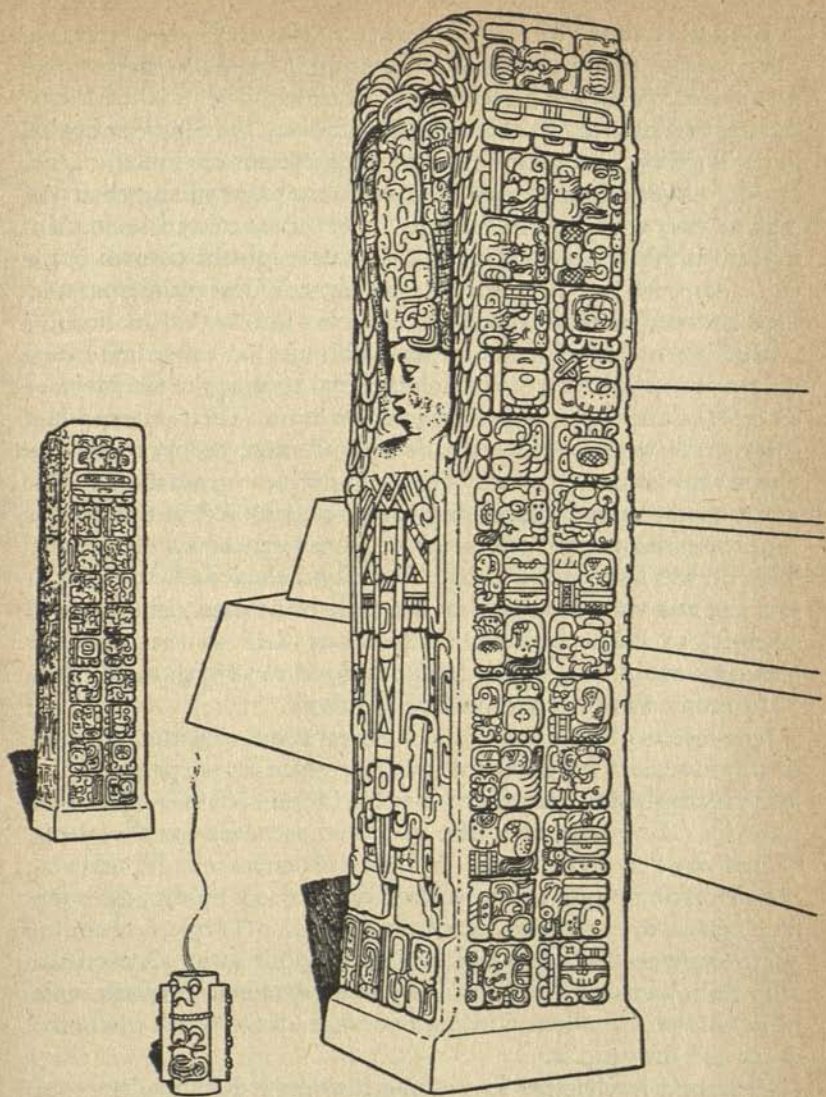


FIG. 11.—Stelæ A and C, Quirigua.

In typical fashion gods are carved on the fronts and backs and glyphs on the sides of these two monuments, both dedicated in A.D. 775. The nearer text (somewhat simplified for clearer reproduction) records the usual starting point of the calendar, probably a recreation of the world, written 13.0.0.0.0 4 Ahau 8 Cumku (3113 B.C.). Copal is still burned before stelæ by the Maya. The incense burner is a British Honduras type of approximately correct date; no examples of Quirigua incense burners have been found.

years, and so in the thirty years of his manhood (the Maya are not long-lived) a priest-astronomer might under ideal conditions observe about twenty heliacal risings. In reality, bad weather would reduce that number to about ten. Moreover, the Maya reckoned heliacal risings as coming four days after inferior conjunction, and it requires very sharp eyes to distinguish the planet then, when it is still so very close to the sun. If the observer missed seeing the planet on the fourth day, his calculations might be thrown out a day. Also, he had to work out the planet's deviation from 584 days between heliacal risings and take that into his calculations.

Under those adverse circumstances it must have required many generations of observers to reach the final accuracy of the Maya—an error of one day in slightly over 6,000 years. The two requisites for success were boundless patience and close co-operation between astronomers of sundry cities and different generations. The Maya character and upbringing surely contributed to this result, supplying the essential elements of perseverance and teamwork. The end was less praiseworthy. The Maya believed that the morning star was very dangerous at the time of heliacal rising; it was essential to know beforehand the exact date so that effective measures could be taken by the priesthood to save those in peril. Astronomy was the handmaid of astrology.

The results of these centuries of observation, of deduction, and of improvement on older formulæ are given in six pages of the Maya hieroglyphic codex known as the Dresden (it is in a Dresden library). The pages were first identified as tables for the planet Venus over sixty years ago by Ernst Förstemann, librarian at Dresden, who began to study Maya codices as a hobby; the complex system of corrections was solved by John Teeple, a chemical engineer, who took up Maya studies to while away time on the long train journeys his professional work entailed. As in the case of the Maya priest-astronomers, one took up the torch where the other had dropped it.

A second intellectual feat of the Maya priest-astronomer was the construction of a table for predicting when solar eclipses might be visible. Here again patience, co-operation, and deduction were required. The Maya certainly had no knowledge that a solar eclipse can occur only at the new moon's falling within about eighteen days of the sun's crossing the moon's path (the node), an event that takes place every 173.31 days (the eclipse half-year). They could not have known this because they never realized that

the earth revolved around the sun. However, by keeping lists of the positions in their sacred almanac of 260 days, they finally realized that eclipses fell within three segments of slightly under 40 days apiece in a doubled sacred almanac, that is to say, a period of 520 days. That is so because three eclipse half-years (3 times $173\cdot31$ equals $519\cdot93$ days) are only 0·07 days less than two rounds of the sacred almanac. By noting the centre points of each of those three segments, they had discovered the nodes, without, however, knowing what the node was.

Thus by calculating forward in multiples of six moons, they could find whether the date reached fell within the correct segment of the 520-day double almanac. If it did, they knew an eclipse might occur on that date; if the date reached fell beyond the segment, they knew there could not be an eclipse at that point, and so subtracted one moon from the total to reach a position with the segment. In that way they were able to work out the correct sequence of several possible eclipses at intervals of six moons and then one after five moons.

The results of these observations and of the reasoning from them are presented in this same hieroglyphic Dresden codex as a table giving sixty-nine dates on which solar eclipses would occur for a span of nearly thirty-three years (11,960 days), after which the table could be used again.

The astronomical knowledge of the Maya and their lack of any information on the nature of the earth or the paths of eclipses prevented them, of course, from knowing which eclipse would be visible in the Maya area or, indeed, from realizing that on every date which they had picked a solar eclipse would be visible somewhere in the world, although probably not in the Maya area.

About one eclipse in four or five is visible in some part of the Maya area, so that a Maya priest-astronomer in the course of his working life of some thirty years would not observe over a dozen solar eclipses, perhaps not that number in view of the many cloudy days. With such limited data no one man could have realized the association of eclipses with the double sacred almanac. We must postulate an accumulation over several generations of notes on observations, and finally the genius who experimentally plotted the recorded eclipses not on a single, but on a doubled, sacred almanac and found the key to predictions. Many solutions seem quite simple once they are published, as does this one of using the double sacred almanac, but the unknown Maya

astronomer, roughly a contemporary of Charlemagne, who took that step, made a brilliant discovery. One must admit this was not a search for truth for truth's sake. During solar eclipses fearsome beings descended to earth, endangering mankind; foreknowledge of the times of possible eclipses allowed the priests to take counteraction to save mankind.

The really outstanding successes of the Maya in determining the average length of the synodical revolution of Venus and in constructing tables of possible dates for solar eclipses were equalled by the accuracy with which they learned to measure the length of the tropical year.

In addition to the tun of 360 days and the katun of 20 tuns, the Maya had a year of 365 days which ran concurrently with the 260-day sacred almanac, and was divided into 18 "months" of 20 days, and a final period of 5 days, which was considered as in a way outside the year. This last was a time of extreme danger when all kinds of evil might be expected to afflict man, and while it lasted the people abstained from all unnecessary work, fasted, and were continent.

The interlocking parts of the calendar are shown in Figure 12 as engaged cogwheels. The smallest carries thirteen numbers which represent gods and accompany the twenty day names. Cog 13 engages Cog Ahau; the following day will be 1 Imix, the starting point of the 260-day almanac. As there are only thirteen cogs on the number wheel, but twenty on the day-name wheel, the next time Ahau comes round full circle its number will be 7, and it will be followed by 8 Imix, 9 Ik, etc. The name wheel will have to make thirteen revolutions before cogs 13 and Ahau are again engaged. That round of 260 days is the sacred almanac. On the right is part of a larger wheel of 365 cogs, representing the year of 18 months of 20 days each and the five odd days that end it. The day 13 Ahau is locked with day 18 of the month Cumku. Eight days later, after passing through the five unlucky days of Uayeb, 1 Pop, New Year's Day, will be reached, and the two wheels at the left will have moved eight cogs to reach 8 Lamat. The whole date, therefore, will read 8 Lamat 1 Pop. As 5 is the only common factor of 365 and 260, the year wheel will have to rotate 52 times before 13 Ahau again falls on 18 Cumku. This period of 52 years of 365 days is called the Calendar Round. There were, therefore, 18,980 different combinations of day name, number, and month position in the Maya calendar.

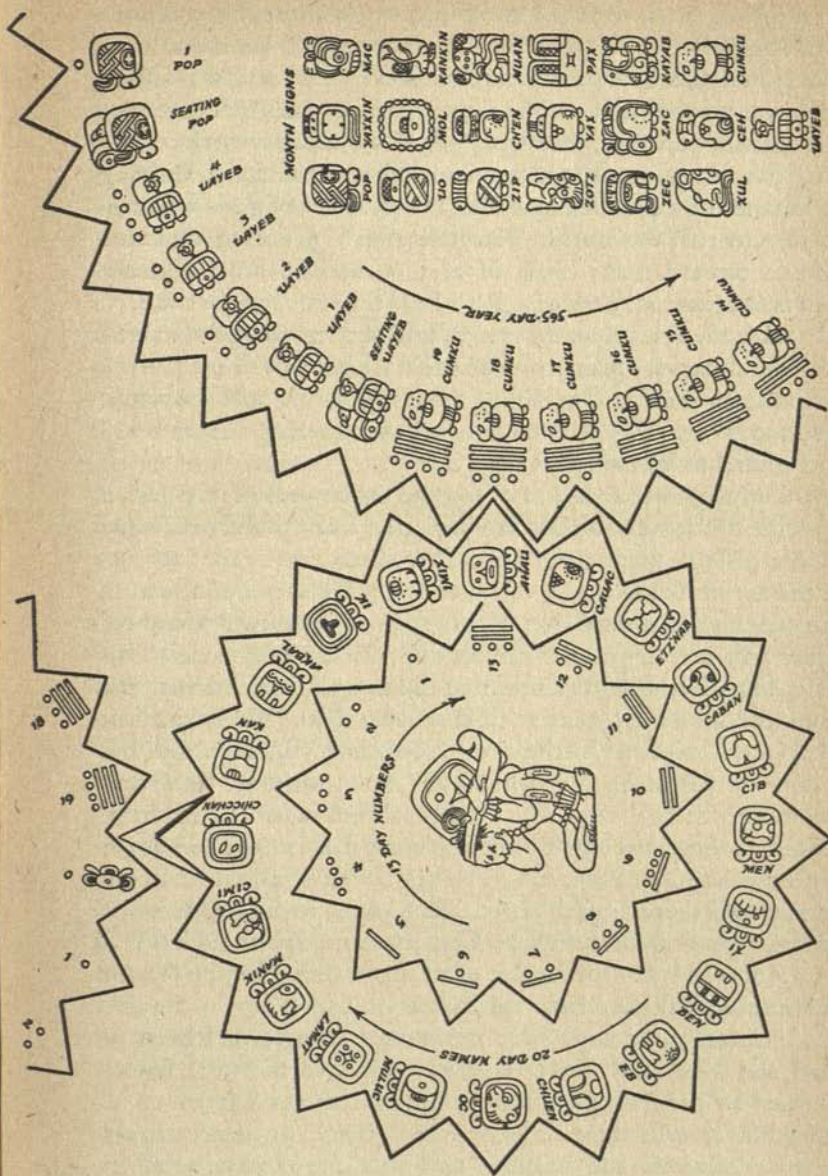


FIG. 12.—The Mechanics of the Maya Calendar.

For explanation, see Chapter IV. Presentation of the living gods of the calendar as bits of mechanism would have horrified the Maya. To conciliate them, the day 13 Ahau is presented in Maya style in the centre of the wheel. The god of the number 13 prepares to set down the load of Ahau at the end of his day's march.

At the top left a large sprocket moves the 20-day month wheel one position every time the day-name wheel completes a revolution. Similarly, at every complete revolution of the month wheel, a tun (360-day) wheel (not shown) would be moved one position, and so on up the scale of Maya time periods until after 8,000 of their years of 360 days, the pictun wheel would move one cog.

A Maya would not approve of this illustration, for to him it is not a matter of a complex machine, but of series of gods who take it in turn to rule the world. The gods of 4, 7, 9, and 13 are kindly disposed toward man; those of 2, 3, 5, and 10 are malignant. Ahau is not just the name of a day—he is the sun; Imix is the earth god; Kan, the friendly corn god; Cimi, the feared god of death. For a good harvest plant corn on 8 or 9 Kan, but don't marry a man born on the day Oc (day of the dog), for he will stray from home too often. The days are live beings. Bearing that in mind, let us return to its mechanics.

No leap days were added to keep the vague year of 365 days in step with the solar year, but the deviation was carefully reckoned and many Maya calculations treat of the correction needed to wipe out the accumulated error. That, at least, is the opinion held by most students of the subject, but there are one or two of my colleagues who are sceptical of our interpretation of the calculations. In this discussion I shall assume that their scepticism is unjustified.

Suppose in our calendar we had no leap days. We have added 84 leap days to our calendar since November 5th, 1605, but had we done as the Maya did, and added none, we would celebrate November 5th this year when the sun rises where it normally appears on August 13th (I omit the complication of the shift to the Gregorian calendar). Guy Fawkes bonfires would be in late summer, and there would be no fallen leaves to throw on them. With the passing of centuries Guy Fawkes day would fall in spring. Similarly, in the course of nineteen centuries the feast of Christmas would have been celebrated on every day of the year if its position three days after the winter solstice had been retained, and we should now be celebrating it in early April. Easter, governed by the spring equinox, would fall around July.

The Maya, with their orderly nature, being opposed to such chaotic conditions and wishing to know the correct solar influences, calculated the error accumulated by their calendar. The base of the calculation was a certain date corresponding to 3113 B.C. in our calendar, from which normally dates were reckoned. This

was a fictitious starting point, which in a general way corresponded to the *ab urbe condita* of the Roman calendar; it perhaps marked the last creation of the world (the Maya believed that the world had been created and destroyed several times, and that we are now in the fifth [?] creation). The actual date was a day 4 Ahau falling on the eighth of the month Cumku, which ended a group of 13 periods, each of 4,000 approximate years. The position 4 Ahau 8 Cumku repeats every 52 years, and it seems that at each repetition, the Maya calculated and recorded on stelæ the accumulated error (Fig. 11, page 153).

One anniversary fell in January, A.D. 733. On a monument erected in A.D. 731 at Calakmul the error is calculated one year before for this anniversary. Our Gregorian calendar would have inserted 932 leap days in the 3,845 years which had elapsed since that base date. By subtracting 730 to represent the two complete years of 365 days, the actual rectification amounts to 202 days. The Maya correctional date occupies the month position 7 Mol, which is 201 days before 8 Cumku. The Gregorian calendar adds 24.25 leap days per century, a shade too much because the solar year calls for a correction of just under 24.22 days per century, which would mean a total correction (excluding complete years) of 201.2 days. The Maya calculation is a fifth of a day less than is called for, but a day better than our own Gregorian calendar. Actually, as the Maya did not use fractions, it hits the nail right on the head. The next anniversary of the original 4 Ahau 8 Cumku fell in A.D. 785. This time Quirigua carved the correction on a monument, and gave the correctional date as the month position 15 Yax, which is 212 days after 8 Cumku. The solar correction for this interval of 38.98 years after subtracting two whole years would be 214 days; Gregorian would be 215 days. Thus the Maya is two days short of the solar correction. Most Maya calculations of the accumulated error at the height of the Classic Period run one or two days less than the solar year calls for, whereas in the Gregorian system the correction would be a day too much.

Expressed as figures, this makes dull reading, but remember that a mistake of one minute in measuring the length of the year produces an error of over two and a half days in calculations, such as those of the Maya, spanning nearly 3,900 years. How did they achieve such precision? So far as we know, they had no exact means of measuring parts of a day, although there is a little evidence that day and night may have consisted of nine "hours"

apiece. Their "hours", however, seem to have been rough divisions with such names as "sun comes out", "sun now far away", "a little to midday", "noon", etc.; they were surely not accurate time counts in turn divisible into some native equivalent of our minute. It is, therefore, obvious that the Maya could not set up lines of sight and measure accurately the interval from one equinox to another; all they could have done to gauge the length of the year would have been to reckon how the sun slipped back in terms of days. Careful and patient observation over hundreds of years, transmission of data from one generation to another, and flexible minds willing to discard inaccurate calculations were the essentials of success. These are precisely the qualities requisite for the other achievements in astronomy already discussed.

The cipher (nought) and place numerations are so much parts of our cultural heritage and seem such obvious conveniences that it is difficult to comprehend how their invention could have been long delayed. Yet neither ancient Greece with its great mathematicians nor ancient Rome had any inkling of either nought or place numeration. To write 1848 in Roman numerals requires eleven letters—MDCCCXLVIII. Yet the Maya had worked out a system of place-value notation while the Romans were still using their clumsy system. The Maya system resembles our own, but differs from it in some respects: numbers are placed in vertical, not horizontal, lines; the space fillers corresponding to our cipher mean completion and cannot stand for zero or nothing; the system is vigesimal (count by twenties), not decimal.

The completion symbol most commonly used is a shell, although there are other forms (Fig. 13, Nos. 1-5, page 162). The Maya used dots for numbers one to four, and a bar for five. Thus four is written as four dots; nine as a bar and four dots; twelve as two bars and two dots (Fig. 13, No. 1, page 162). The vigesimal system seems to us at first somewhat complicated, but it is really almost as simple as the decimal system once it is well mastered.

Whereas in our decimal system the addition of noughts at the end multiplies the total by ten, hundred, thousand, etc., in the Maya vigesimal system the sequence runs 1, 20, 400, 8,000, 160,000, 3,200,000, 64,000,000. These higher numbers were used with sufficient frequency to pass beyond the state of mathematical concepts and to require names. Indeed, Maya terms for all these multiples, and also for that of the next highest unit, corresponding to 1,280,000,000, are known, and glyphs for six of them

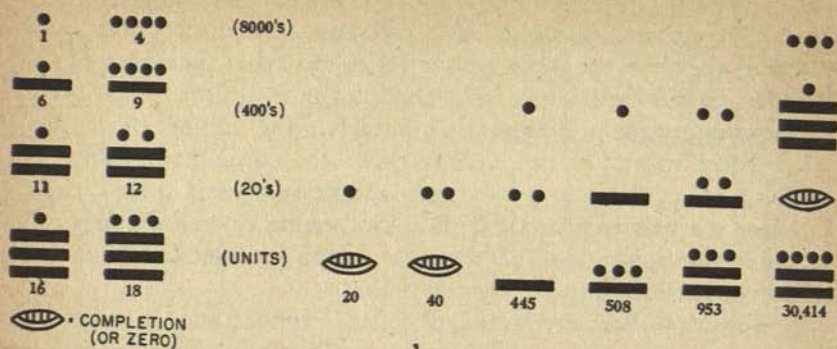
as used in counting of approximate years have been identified (Fig. 13, Nos. 19, 20, 21, 26-29, pages 162-3).

The number 400 would be expressed as one dot for four hundred, a shell in the second place to indicate that the count of the twenties was completed, and a shell in the first place to mark that the count of the units was also complete. The number 953 would similarly be written two dots (2 times 400 equals 800), two dots and a bar (7 times 20 equals 140), and two bars and three dots (2 times 5 equals 10 plus 3). This and other examples are illustrated in Figure 13, but note that the system used for calendrical computations is different, as explained below.

The Maya bars and dots look rather clumsy, and, in contrast, it happens that this particular number, 953, can be expressed rather simply in Roman numerals—CMLIII. However, if you look at Figure 13, No. 1, you will see that 953 is the sum of the two numbers to its left, 445 and 508. The bars and dots are easily added together in this system of place notation; the Roman equivalent, CCCXLV and DVIII, are less easily summed to reach CMLIII. Once you have a cipher and a concomitant system of place notation, problems of simple arithmetic became infinitely easier, and it matters little whether the system is decimal, duodecimal, vigesimal, or quinary.

This was a discovery of fundamental importance. That it was not an obvious one is shown by the failure of any people of our Western world to make it. Even the great philosophers and mathematicians never found this simple way of lightening their laborious calculations. Indeed, it was not known in Europe until it was passed on to our ancestors, after the Maya Classic period had ended, by the Arabs who had learned of it from India.

Although elaborate multiplication tables and calculations employing the Maya cipher and place notation have survived, all of them concern the calendar; no Maya enumerations of such mundane matters as sacks of maize, army effectives, or counts of cacao beans (the principal currency of Middle America) remain. The calendrical computations are somewhat more involved because they employ a system, roughly comparable to fractions, to take care of periods of less than an approximate year. Just as we normally count time in years expressed in the decimal system and add the months and days in separate decimal counts, as 1/12/1953, so the Maya computed elapsed time in approximate years of 360 days expressed in the vigesimal count, and added the months and



1

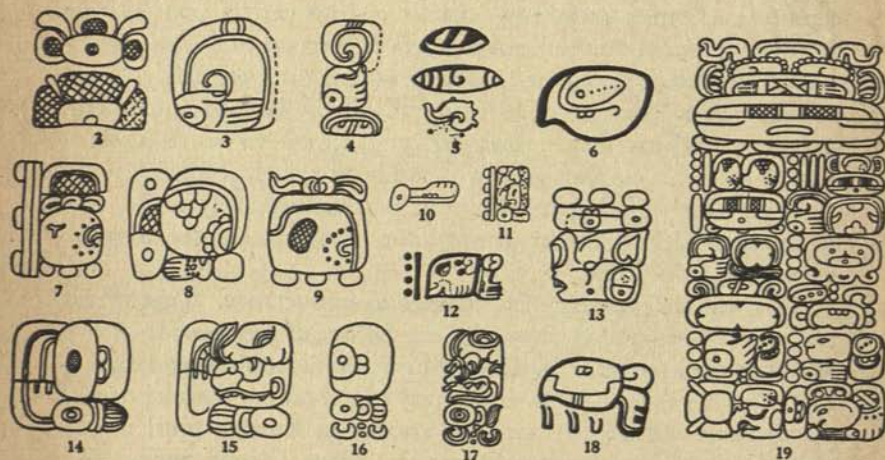
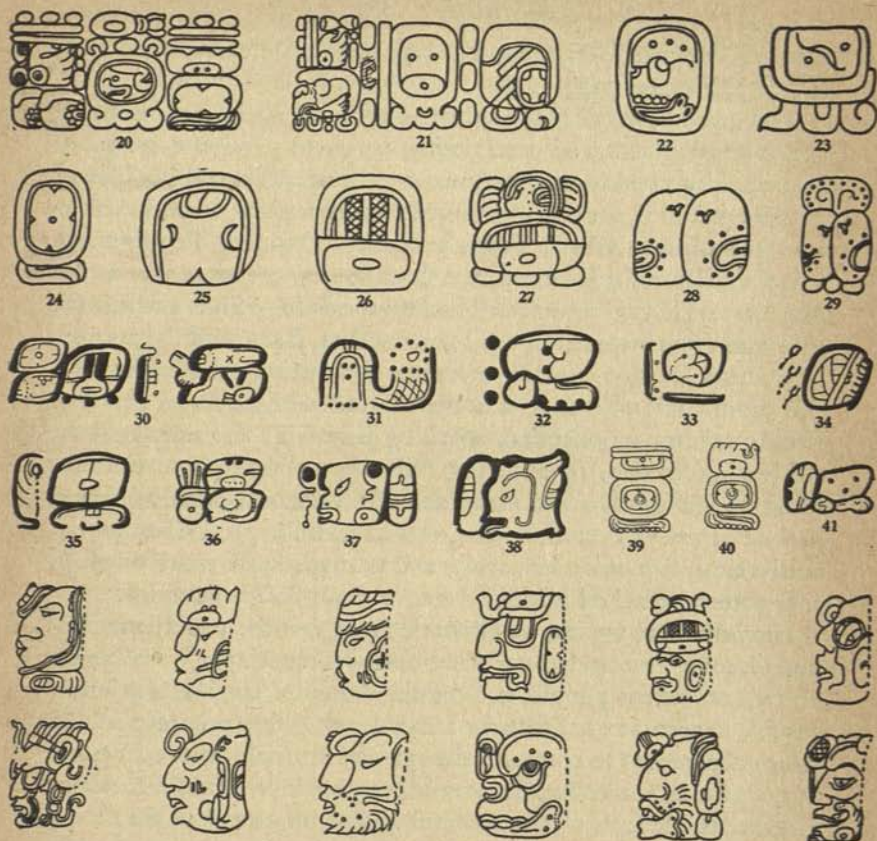


FIG. 13.—Examples of Maya Hieroglyphic Writing.

1: Bars and dots system of writing numbers. 2-5: Symbols for zero or completion. 6: Sign for 20. 7-9: Month sign Ch'en to show how the hatched element, representing black, can be at left of, above, or inside the main element. 10: *se*, sign for wood or tree. 11, 12: Glyph of the god Bolonyocte, composed of number 9 (*bolon* in Maya), the *Oc* sign, and *se* element. 13: Month position 3-te Zotz'. 14, 15: Count forward to. The head of the *xoc* fish represents "count" (also *xoc* in Maya); or the water sign, the fish's environment, can be substituted. Element to left means "forward"; that below, "to". 16, 17: Count backward to. Forward sign replaced by element beneath. 18: Fresh maize. 19: An Initial Series date at Quirigua stating that 3,965 tuns (or vague years), no months, and no days have passed (A.D. 795 in our calendar). The sun god is lord of the night, the moon is three days old, and four



moons have been counted. The day is 4 Ahau. 20, 21: The two longest calculations into the past, dates ninety and four hundred million years ago, are recorded. 22, 23: Death signs. 24-29: Glyphs for day, twenty-day month, tun or vague year, 20 tuns, 400 tuns, and 8,000 tuns. 30: Severe drought is the prospect for the year. 31: Drilling fire with sticks. 32: Very lucky. 33: Misfortune. 34: Rainy skies. 35: Seed. 36: Fainting spells. 37: Moon goddess. 38: Maize god. 39: East. 40: West. 41: Red world-direction tree. 42: The numbers 1-13 were gods, and at times the Maya carved or painted the head of the god to represent his number. Here in sequence are the heads for 1-10 inclusive, 19, and completion. The Maya used "teens" as we do. Thus the head for 19 combines the jaguar features of the god 9 (spots and hair around mouth) with the death symbols of the god of 10 (fleshless jawbone).

days in separate vigesimal counts, more or less comparable to a fractional reckoning. The unit for computation was the year of 360 days, known as a *tun* (Fig. 13, No. 26, page 163), divided into 18 "months" (Fig. 13, No. 25, page 163) each of 20 days (Fig. 13, No. 24, page 163).

The greater part of Maya culture—religion, social organization, agricultural plants and techniques, weapons, and the range of household utensils—was common to all the advanced peoples of Middle America, for one must not forget that great centres such as Zapotec Monte Alban, Tajin, probably Totonac, Teotihuacan, and the cities of La Venta culture flourished at the same time as the great age of Maya culture. All had their classic periods at the same time and drew inspiration one from another, just as did the peoples of western Europe in mediæval times and during the Renaissance. We cannot tell who first introduced such techniques as pressure flaking of flint or obsidian, working jade with the tubular drill, cultivating cotton, or applying polychrome designs to pottery. Most of the luxuries and amenities of life seem to have appeared in the Formative Period; others, such as metallurgy, the hammock, cultivation of manioc (cassava), and perhaps batik work on cloth and pottery, reached Middle America from South America.

Nevertheless, we can be almost certain that the purely intellectual discoveries noted above were made by the Maya. So far as we know, no other people in Middle America used tables comparable in accuracy to those the Maya developed to predict possible solar eclipses and to compute the synodical revolutions of Venus, nor, so far as we know, did any other people in Middle America measure the length of the tropical year with the skill the Maya attained. The other peoples of Middle America were not pre-occupied with time as were the Maya and, therefore, lacked the stimulus to explore such fields. Indeed, the Aztec had no method for fixing a date except within the fifty-two-year cycle they shared with the Maya and other peoples of Middle America.

It is just possible that the people of La Venta, the so-called Olmec, invented the symbol for nought or completion, since they also used bars and dots in place numeration. However, it is far from certain that they used place numeration before the lowland Maya did (there is no symbol for nought in the few surviving La Venta texts). Furthermore, I am inclined to think that the developers of La Venta culture were Maya-speaking.

INVENTIONS AND DISCOVERIES

A number of important inventions and discoveries can be placed to the credit of the peoples of Middle America, but in no case can we be sure which particular group should have the honour for them. Among these is the manufacture of rubber and its use in a number of specialized articles: rubber balls used in playing the ball game, rubber-soled sandals, rubber-proofed rain-capes, and poultices of rubber, copal wax, and tar. A brilliant blue pigment of turquoise tone, now known as Maya blue, was much used by the Maya in painting murals. It was made of beidellite, a clay mineral. As this colour was used extensively by the Maya during the Classic Period, but is unknown or very rare in the coeval cultures of Middle America, its discovery may be attributed to the Maya with some assurance. Logwood dye, indigo, cochineal, and a purple obtained from a shell-fish are pigments discovered by natives of Middle America, but of these only the first can probably be credited to the Maya.

No race has equalled the American Indian in the number and variety of wild plants brought into cultivation, but, again, it is difficult to say where any one plant was first cultivated. Some botanists think that Maya of the Guatemalan highlands may have developed maize, but others place its origin in Peru. Three important food plants may perhaps be credited to the Maya—cacao, the papaya or pawpaw, and the aguacate.

Our words cacao, cocoa, and chocolate come from the Aztec, but the cacao tree does not grow on the Mexican plateau, and the Aztec names may have been derived from the Maya (*chacau haa*, literally "hot swizzled [drink]"). As the tree is probably native to the damper parts of the Maya area and has a relative, *Theobroma bicolor*, which grows wild in many parts of the Maya lowlands, it is at least probable that the Maya were the first to cultivate it. Cacao beans served as currency throughout Middle America (their handling probably accustomed the Maya to large numbers). Indeed, it is only in the last century that they have ceased to be used in market transactions.

The pawpaw or papaya grows wild in much of the Maya area, although the fruit of the wild variety is small and hardly edible. The cultivated fruit is probably a result of Maya industry. The same is true of the aguacate or avocado pear, which is native to

Central America and northern South America. Aguacate is the Aztec name, but its use in the Maya area is very ancient, as dialectical variations of its name demonstrate.

All the peoples of Middle America were enthusiastic farmers and keen observers of nature, so it is probable that the Maya acquired more cultivated plants from their neighbours than they gave in exchange. Certainly they received many of their basic foodstuffs from the peoples of the Formative Period.

An interesting case of inventiveness is reported, although not on the best authority, of the Xinca, a small non-Maya group in south-eastern Guatemala. They had a mechanical stone-thrower for use in war. A transverse bar rested on two forked posts, and from this hung a rope, to the end of which was attached a beam in horizontal position. The rope was twisted, and, on release, untwisted, rotating the beam, which in turn hit the topmost of a pile of stones, sending each stone flying with great force toward the enemy. One supposes that aim was not too accurate. As the Xinca had borrowed much of their culture from their neighbours, Maya and Pipil, this device may have been a Maya invention, although that is not very probable, for the Maya were not mechanically minded.

A peculiar weapon of the highland Maya was the hornet bomb. Hornets' nests were hurled at the enemy, but we have no information on methods of keeping the hornets peacefully in their nests before the ammunition was used against the foe; the danger of premature explosion must have been considerable.

In road-building the Maya did not equal the Inca, but they seem to have been ahead of their Middle American neighbours. The finest Maya road now known connects the city of Coba in Quintana Roo with a small site called Yaxuna, a few miles south of Chichen Itza. The road is sixty-two and a half miles long and averages thirty-two feet in width. For the greater part of its length it is a little over two feet high, but in crossing swampy depressions its height increases, in one case to slightly more than eight feet. Walls of roughly dressed stone form the sides; large boulders topped with smaller stones laid in cement compose the bed, and the surface, now badly disintegrated, was of cement or stucco. A sort of platform forty feet long and sixteen and a half feet high covers the road just before the road reaches the outer suburbs of Coba, and it seems probable that processions halted there to make sacrifices before entering the city. Other mounds

and platforms scattered along the road indicate former settlements, but none is of much importance.

Coba itself is the hub of a series of roads, of which the next most important runs to a fair-sized ruin called Kucican, about five miles south-southwest. Near the start, the road, which there is thirty feet wide and about three feet high, crosses an arm of Lake Macanxoc. A detour of perhaps a quarter of a mile would have avoided the lake, but this was not made (conceivably the lake is now larger than in ancient times, and this arm was not originally part of it). The road protrudes well into the lake from the northern shore, and a short distance from the southern; lines of reeds mark its course for some distance where each end disappears into the water. At various points in the first two miles, side roads lead off to small groups of ruins, and one of these also cuts across another arm of the lake. The road passes through one small group of ruins, a gateway with rectangular pillars at each end marking the entrance and exit. At another point the road intersects another at a sharp angle. A short distance before reaching Kucican the road is several yards high, and at one point a vaulted passage pierces the roadbed, an underpass by which alone one could pass from territory on one side of the road to that on the other, for the high vertical walls could not be scaled.

The building of these roads entailed tremendous labour and not a little engineering knowledge. In swampy sections, the engineers had to be sure that their foundations were deep and secure (there are no detours to avoid swampy sections); the lack of any evidence of subsidence demonstrates that they solved the problem. The tracing of the routes must have presented problems, too. The road from Coba to Yaxuna follows these directions: start to mile 4, 279 deg.; mile 4 to mile 10, 269 deg.; mile 10 to mile 15, 260 deg.; mile 15 to mile 20, 270 deg.; mile 20 to mile 40, 260 deg.; mile 40 to mile 62 (Yaxuna), 264 deg. Distances are to the nearest mile; degrees are magnetic. Since three of the changes of direction coincide with archæological ruins, we can feel fairly certain that the road was planned to link these various cities. Yet there are two sections of twenty and twenty-two miles respectively without any change of direction. At night, with bonfires burning on pyramids at the termini, an engineer at the half-way mark might be able to lay out his line, but with the thick forest around him, the task cannot have been easy. In solving the problem, the Maya demonstrated ingenuity.

These Maya roads were constructed during the Classic Period. Shorter ones connecting outlying parts of Uaxactun and other Maya cities of the Peten have been found, and aerial photographs of the Peten, made some years ago in an aerial survey for oil, seem to indicate in the north of that uninhabited land a great road comparable to the Coba-Yaxuna road. There were roads of sorts in other parts of Middle America, but none comparable to the finest built by the Maya. Yet the Maya had no wheeled traffic or beasts of burden to use these magnificent wide roads.

In the field of architecture the Maya were far ahead of their neighbours in Middle America and showed more engineering skill than the ancient Peruvians. Inca buildings are made of beautifully fitted stonework, but their erection called for neatness, not for engineering.

The religious buildings of the contemporaries of the Maya in Middle America were of stone with roofs which were thatched or were formed of flat beams on which rest poles to support a layer of small stones imbedded in mortar. The high-pitched roof of thatch was far commoner than the flat roof. Both these types were used by the Maya, but the commonest type of roof for ceremonial structures was the corbelled vault, in which the two legs of the vault draw together until the space between can be bridged with capstones (Plate 8).

In the earlier Maya buildings walls and vaults were constructed of large stones (so-called block masonry) usually tenoned into the hearting and set in mortar with a fairly liberal use of spalls. The hearting was largely stone with only a moderate amount of mortar. At a later time (end of the Classic Period) this type of masonry had evolved to the use of solid concrete faced with a veneer of thin well-cut stones. The vault stones often are provided with a cut-away tenon (called a boot-shaped vault stone) to hold it in position against the pull of gravity, but facing stones of walls do not have these tenons and are true veneer. The concrete is a mixture of lime, *sascab* (a friable marl with a high preponderance of calcium carbonate) used in place of sand which is very rare in the Maya lowlands, and lumps of limestone. Concrete construction produced far stronger buildings than had been possible with the old type of masonry.

In building the two inclining walls of a corbelled vault, the Maya had to study problems of stress and strain and the tensile strength of concrete. Newly laid mortar could crush under

the weight of the overhanging soffitt and be squeezed out at the vault face, causing the vault to collapse. Concrete, on the other hand, would distribute the weight more evenly over the whole thickness of the vault.

The Maya architect seems to have been fully aware of the importance of the mechanical principle of stability, but to have been hampered by the weakness of his cement until it had time to harden. He got around that problem in two ways: by building his walls to a given height and allowing them to set before continuing the construction (there is plenty of archæological evidence for this practice), and by setting wooden crossbeams at intervals to help hold apart the two legs of the vault until they were bridged with capstones (Fig. 5, page 77).

A detailed description of Maya architecture would be out of place in this book, and I must confess to a complete ignorance of theories of stress. The point, however, that I would make is this: the Aztec and other peoples of Middle America, as well as the Inca, built by the simple process of laying one stone directly on another; the thrust was only vertical, and they needed no engineering knowledge to raise such buildings. The Maya, in choosing to use the corbelled vault, took up a challenge which could only be met with intelligence and experiment.

Earl H. Morris, who was in charge of excavation and reconstruction at Chichen Itza for several seasons, writes: "With the beginning of the vault, in most cases a decidedly ticklish procedure was at hand, which needed a clear understanding of the principles of balance and a meticulous observance of plan for its successful accomplishment." And of the vaulting at the Temple of the Warriors: "When one visualizes a rib of masonry 91.40 metres in length, as was the case in the North and West Colonnades, balanced upon a row of slender round columns that were not even monolithic in character, one can but regard this type of construction as one of the boldest architectural experiments ever attempted. Surely architects and masons alike must have sighed with relief when at last capstones were laid to bind rib to rib."

Why, one wonders, did the Maya use the corbelled vault instead of thatching their temples or covering them with flat beam-and-pole roofs, so much simpler to construct and permitting much wider rooms? In several English cathedrals a somewhat similar situation obtained: wooden roofs of the Norman Period were replaced with the ribbed stonework of the Gothic arch, despite all

the accompanying difficulties of lateral thrust. The answer must be that no effort can be too great in building to the glory of God or of gods; man's creations are sanctified by overcoming difficulties. Furthermore, as I have already remarked, it is probable that the Maya favoured small dark rooms for their ceremonies; large light rooms would have detracted from the atmosphere of mystery. They could have kept the corbelled vault and still had larger and lighter rooms by resting the vaults on columns instead of solid walls, but it was not until the Toltec reached Chichen Itza with their less mystical approach to religion that this style of building was employed.

It is remarkable that the intellectual successes of the Maya were not (from our point of view) practical; they were the outcome of spiritual needs. The Maya astronomer strove for knowledge, not as an end in itself, but as a means of controlling fate, a kind of astrology. There was, he felt, an orderliness in the heavens to which the gods conformed; once that was learned, he could predict the future through exact knowledge of which gods held sway at any given time, and influence it by knowing when and whom to propitiate.

The great roads were not built for practical ends, for the Maya had no beast of burden or wheeled vehicle; they were surely for spiritual purposes—as a setting for great religious processions. The corbelled vault was not employed for utilitarian purposes, but almost surely as an embodiment of sacrificial effort. Even the Maya blue pigment was primarily for painting murals to the glory of the gods. In the field of everyday living I can think of no discovery of a practical nature attributable to the Maya.

HIEROGLYPHIC WRITING

Middle America is the only part of the New World in which a system of embryonic writing developed. The Aztec and other peoples of Mexico had books, but in them the information is largely in the form of picture-writing, and the glyphs that are scattered through them or carved on stone are with few exceptions pictorial. The day signs—snake and house, for example—are illustrated by pictures of those objects, and even rebus writings appears to have been extremely rare before the arrival of the Spaniards. (Rebus writing is the system in which one writes a sentence such as "I can see Aunt Peg" by drawing an eye, a can,

waves, an ant, and a peg. That is, one reproduces the sound, not the meaning.) Aztec glyphs consist almost entirely of calendar signs and glyphs for persons and towns, and as individuals and towns usually were named after animals or objects, their depiction was simple.

Maya hieroglyphs were sculptured or, more rarely, incised on stone stelæ, altars, ball-court markers and rings, steps, panels, walls of buildings, lintels of stone or wood, and wooden ceilings. They were modelled in stucco; incised on personal ornaments, such as jade and shell; and painted on pottery, on murals, and in books. They are far more numerous and more complex than those of the Aztec.

The Maya did not have an alphabet, nor did they have a syllabic writing except insofar as most Maya words are monosyllables. There is a considerable use of a simple phonetic writing which might be described as an advanced form of rebus writing in that the picture has become so conventionalized that the original object is no longer recognizable. For instance, the curious object in Figure 13, No. 10, is the symbol for tree, *te* in Maya. We find it combined with the symbol for red, as the red tree of the East in Codex Dresden. The sound *te*, but totally unconnected with the idea of tree, was also affixed to number in counting months. In hieroglyphic texts the same symbol is used. Figure 13, No. 13, on page 162, records the third (ox) day of the month Zotz' (bat)—oxte Zotz'. Again, an important god was called Bolon Yocte, and his name may mean something like "nine paces there". His glyphs shows the number nine, the glyph for oc, 'dog', and the *te* sign (Fig. 13, Nos. 11, 12, page 162) although neither dog nor wood have anything to do with his name.

Similarly, *u* means "moon" in several Maya languages, but it is also the possessive "of". The lunar glyph may refer to the moon, but it is also used as the possessive, and even can stand for the number twenty (Fig. 13, No. 6, page 162). An example of old-fashioned rebus writing is supplied by the Maya sign for "count". In Yucatec the word *xoc* means "to count", but it was also the name of a mythical fish which dwelt in the sky and to which worship was made. As the Maya had difficulty in rendering an abstract idea such as "count" in glyphic form, they turned to rebus writing and used the head of the *xoc* fish as the glyph for *xoc* "count" (Fig. 13, Nos. 15, 17, page 162).

Ideographic glyphs were used rather extensively by the Maya.

For example, the head of the *xoc* fish was not easy to carve and might be confused with the head of some other fish or of some animal—there are many animals in Maya mythology which no zoologist would recognize. The Maya, therefore, often substituted for the picture of the fish an ideograph, the symbol for water, apparently with the idea that water, as the element in which fish live, recalls the *xoc* fish. The symbol for water was a jade bead, because water and jade were both precious and green (Fig. 13, Nos. 14, 16). Thus jade equals water equals *xoc* fish equals *xoc* to count. The system is extremely complex.

A remarkable feature of Maya writing is that most, perhaps all, glyphs have two quite distinct forms, which may be used indiscriminately. One is a head form; the other is a symbolic or ideographic form, usually some attribute or element, often highly conventionalized, which recalled the glyph to the reader. It is as though one were to write "St. Peter" or, instead, draw a picture of crossed keys. For example, the day Cimi, "death", could be carved or painted either as a head of the death god or as a symbol resembling the percentage sign, which was an attribute of the death god often painted on his body or clothes (Fig. 13, Nos. 22, 23, page 163). To the initiated that symbol stood for the death god, just as the crossed keys recall St. Peter to the devout.

Most glyphs are compounds, consisting of a main element to which are attached various affixes. A prefix occurs to the left of, or above, the main element; a postfix is to the right of, or below, the main element. The choice of position for either a prefix or a postfix usually depended on artistic considerations, which generally meant a question of how best to fill the available space; but, with few exceptions, a prefix could not appear as a postfix or vice versa without changing the meaning of the glyphic compound. The glyph for "count" supplies a good example of a compound. The main element, as noted, is the head of the *xoc* fish or the sign for water, its counterpart; the affixes are adverbs and a preposition, and change the meaning. The little torch-like element which occurs as a postfix in all examples (Fig. 13, Nos. 14-17, page 162) represent the locative preposition *ti* "to", "at", or "from"; the prefix to the left of above is the symbol for "forward"; the third affix, never present when the "forward" prefix is given, is a postfix indicating "backward". Thus, the affixes alter the sense. In one case (Nos. 14, 15) the whole signified "count forward to"; in the other case (Nos. 16, 17), "count backward to [or from]".

Such variability, for there are eight ordinary combinations of these elements, does not make the interpretation of the glyphs any easier.

Identified affixes include adjectives, adverbs, prepositions, and relationship terms, but Maya writing is so fluid that an affix can change places with a main element or it can be "infix" in the main element; that is, the affix can be omitted and its outstanding characteristic added as a detail in the interior of the main glyph (Fig. 13, No. 9, page 162). Similarly, two glyphs can be fused into one by combining the essential elements of both in a new glyph.

The Maya wrote simple sentences, but I rather doubt that they had affixes to express pronouns and tenses. Actually, verbs are rather weak in the Maya language; they can be described as verbal nouns. Thus we find in the divinatory almanacs sentences which can be tentatively translated as, "His influencing the maize, the death god. Heaped up death," or as we might say, "The death god now rules the growing maize. Much death will be the result."

Most of the glyphs are still undeciphered, and, in the absence of an alphabet, progress is slow. There is no key or Maya equivalent of the Rosetta stone, save for the little information Bishop Landa gave us on the glyphs of the calendar. The decipherment of new glyphs does not appreciably simplify the task of tackling the remainder, as in a crossword puzzle or in a writing which employs an alphabet.

It is hazardous to estimate the number of Maya glyphs, because most of them are compounds. One common glyphic sign is found as a main element in combination with nearly eighty different arrangements of affixes of infixes. Some of these affixes may be variants of one another, thereby reducing appreciably the total of different meanings. Furthermore, affixes cannot only become main signs or vice versa, but they can have both personified and symbolic forms. Moreover, as the Maya abhorred exact repetition, the sculptor (and, to a lesser extent, the scribe) often introduced every permissible variation when it was necessary to reproduce the same glyph several times in a text. Many of these variants of known and unknown glyphs are surely still unrecognized. Such uncertainties vitiate any good guess as to the number of glyphs with distinct meanings.

In some inscriptions, principally composed of dates and calculations, most of the glyphs can be read; in others, which appear to

deal primarily with ritualistic matters, the percentage of deciphered glyphs is quite low; in a few texts not a glyph can be translated.

In many cases we know what the main element of a glyph signifies, but we cannot decipher the affixes; in other cases the reverse is true. The matter is further complicated by the different meanings an element can have; for instance, the glyph for *tun* (Fig. 13, No. 26, page 163) can mean the approximate year of 360 days, or it can mean "end", or it can serve as an intensifier as in the glyph for severe drought, *kintunyaabil*—*kin*, "sun", *tun*, "intense", *yaabil*, "for the [whole] year" (Fig. 13, No. 30, page 163).

So far as is known, the hieroglyphic texts of the Classic Period deal entirely with the passage of time and astronomical matters, the gods associated therewith, and, probably, the ceremonies appropriate for these occasions. They do not appear to treat of individuals at all. Apparently no individual of that period is identified by his name glyph—he may be by the glyph of his office—even in non-religious scenes.

Name glyphs have been identified only in scenes of the Mexican Period, and no doubt reflect that strongly extrovert culture. Even in the historical fragments which survive in the Colonial transcriptions called the Books of Chilam Balam there is singularly little stress on the doings of individuals, and that only when individual behaviour affected history.

Maya hieroglyphic writing was perfected primarily to record the passage of time, the names and influences of the reigning gods of each of its divisions, and the accumulated knowledge of the priest-astronomers which had a bearing on those subjects. Its use for other purposes was a secondary development. Again, Maya ingenuity was directed by an end which we would regard as impractical.

Hieroglyphic writing was also set down in books composed of a single sheet of paper up to about eight inches high and several yards long. This was folded like a screen, each fold forming a page about six inches wide, both sides of which carried writing. Because of the screenlike construction, the text on the whole of the front is to be read before one passes to the back. The contents are divided into what we might term chapters, which occupy a varying number of pages. The material for the paper was a fibre obtained from a variety of the wild fig tree. This was pounded as though to make bark cloth, and, when reduced to a clothlike con-

sistency, was covered with a thin sizing of lime to supply the writing surface.

Only three of these books have survived, and they are known by the names of the cities in which they now rest. Codex Dresden, a beautiful example of Maya draughtsmanship, is a new edition made about the eleventh century of an original executed during the Classic Period. It treats of astronomy (the eclipse and Venus tables) and divination. Codex Madrid, of crude workmanship, almost surely is not earlier than the fifteenth century. It treats of divination and ceremonies connected with various crafts and rituals of general importance, such as those at the new year. Codex Paris, also late and not of very good workmanship, illustrates on one side ceremonies and probably prophecies in connection with the endings of a sequence of katuns and tuns. Divinatory matters fill the reverse side. Early Spanish writers speak of codices which treat of history. None of these has survived, but it is possible that the prophecies from the sequence of katuns in Codex Paris are also historical in that Maya prophecies are projections of the past into the future.

The details of the Maya calendar with its meshing of concurrent cycles into the great "long count" recording the lapse of time are too involved to be summarized here. For a fuller discussion of the matter the reader is referred to Sylvanus G. Morley's *An Introduction to the Study of the Maya Hieroglyphs* and, as a more advanced course, to the writer's *Maya Hieroglyphic Writing: Introduction*.

However, in carving the Initial Series, as the long count is called (Fig. 11, page 153; Fig. 13, No. 19, page 162), Maya sculptors did justice to the honour in which time was held. The roll call of the periods has a grand cadence, which in itself is a prayer and a noble oblation to the divine powers. Because it embodied a living creed, it was carved with the same faith, humility, and loving patience that guided the hands that embroidered the magnificent vestments of mediæval Christendom. It is the opening movement of the symphony of time, a treasure in history's store of beauty.

LITERATURE

A few Maya songs have survived, but a fuller appreciation of Maya literature is to be had from the Books of Chilam Balam, which contain many oral traditions and songs of ancient times.

These are often antiphonal in the sense that the second line or sentence answers or expands or is a variation of the first, an arrangement familiar to us from its frequency in the Old Testament. Typical examples are: "The fan of heaven shall descend; the wreath of heaven, the bouquet of heaven shall descend. The drum of the Lord 11 Ahau shall resound; his rattle shall resound." "They shall find their harvest among the trees; they shall find their harvest among the rocks, those who have lost their harvest in the katun of Lord 11 Ahau." "The hills shall burn, the ravine between shall burn. The fire shall flare up at the great *sucte* tree. It shall burn at the sea, on the beach. The squash seeds shall burn, the squash shall burn, the *macal* [an edible tuber] shall burn." And "They moved among the four lights; among the four layers of the stars. The world was not lighted. There was no day: there was no night, there was no moon. Then they perceived that the dawn was coming; then dawn came."

Compare these with "They shall roar together like lions: they shall yell as lions' whelps" (Jer. li. 38); or "He shall come down like the rain upon the mown grass, even as the drops that water the earth" (Ps. lxxii. 6).

This antiphonal character of Maya verse is, I feel fairly certain, present also in the hieroglyphic texts. Glyphs which seem to be redundant probably represent this responsive quality. The prayers of present-day Maya similarly display literary qualities of a high order, and tend to have this same form of antiphony.

Sometimes the Maya played on the sounds of words. For instance, note the contrasting *c'alab* and *c'ilab* in this line: *bal cin c'alab ca bin c'ilab uinic ti be*; or *z'ilic* and *tx'ilic* in this: *hex u z'ilic u pice: u tx'ilic u pach*.

The story of the creation of the *uinal* or twenty-day period is a good example of Maya literature and, likewise, a pleasant example of the personification of the divisions of time and of their march through eternity. The creation starts with the day 12 Oc and is completed forty days later, on the day 13 Oc. Oc means "foot-step", which is most appropriate for the journey of time. In Maya belief the world was in darkness for a long time before the creation of the sun. The days, therefore, came before daylight. The original, in the Book of Chilam Balam of Chumayel, has been translated by Ralph Roys. Very slight emendations have been made:

This is a song of how the *uinal* came into being before the dawn of the world. Then he began to march by his own effort alone. Then said his maternal grandmother, then said his maternal aunt, then said his paternal grandmother, then said his sister-in-law: "What shall we say when we see man on the road?" These were their words as they marched along, when there was as yet no man. Then they arrived there in the east and began to speak. "Who has passed here? Here are footprints. Measure it off with your foot." So spake the mistress of the world. Then he measured the footsteps of our Lord, God the Father. This was the reason it was called counting off the world by footsteps, 12 Oc. This was the count, after it had been created by the day 13 Oc, after his feet were joined evenly, after they had departed there in the east. Then he spoke its name when the day had no name, after he had marched along with his maternal grandmother, his maternal aunt, his paternal grandmother, and his sister-in-law. The *uinal* was created, the day, as it was called, was created, heaven and earth were created, the stairway of water, the earth, rocks and trees; the things of the sea and the things of the land were created. . . . The *uinal* was created, there was the dawn of the world; sky, earth, trees, and rocks were set in order; all things were created by our Lord, God the Father. Thus he was there in his divinity, in the clouds, alone and by his own effort, when he created the entire world, when he moved in the heavens in his divinity. Thus he ruled in his great power. Every day is set in order according to the count, beginning in the east, as it is arranged.

The story has beauty and simplicity, and its imagery is in keeping with Maya philosophy.



ARTISTIC ACHIEVEMENT

During the Classic Period there were at least four great cultures—Teotihuacan, Monte Alban (the Zapotec), Tajin, and La Venta—that were contemporaries of the great Maya florescence, and each with its distinctive art style. All five people were at almost the same cultural level, at least in the field of everyday living; they grew the same staple crops and followed the same system of agriculture so far as differences in climate permitted; they worshipped tribal gods who were as close to one another as the Greek and Roman pantheons; and they shared the same ideas on cosmology and the creation. Yet each had its own style of sculpture and representation in painting, each so distinct from any of the others that it is immediately recognizable.

Despite considerable trade between these centres of Middle America, one region had very little influence on the sculptural style of another during the peak of the Classic Period. The major exception to this generalization is Kaminaljuyu, on the outskirts of modern Guatemala City. There motifs from Teotihuacan and, to a lesser extent, from Monte Alban mingle with the early Maya style. This is not apparent in sculpture, which is scarce at that site, but in the fine painted pottery (the finest examples have the designs painted on a thin plaster-like stucco which was applied to the vessels after firing). There are also minor influences from Tajin at Teotihuacan, and occasional Mexican motifs or deities (particularly Tlaloc, the Mexican rain god) appear on Maya sculpture of the early and middle Classic Period, but it is not until the very end of the Classic Period, when the abandonment of the great cities was near, that exotic elements became frequent in Maya art and reached considerable importance in Yucatan. Nevertheless, all these art styles of Middle America had their roots in the Formative Period; the divergences partly reflect tribal character and environment.

Maya religious sculpture is one of the great glories of pre-Columbian America, but the newcomer to the field may have difficulty in appreciating it because its conventions are quite different from those of Western art. Similarly, Japanese art met with little enthusiasm when first brought before Western eyes. The primary interest of the Maya artist lay in exactly reproducing the attributes of each god and in conforming to the traditional style of

presentation. The necessity of introducing so much symbolism led to over-elaboration of certain aspects and to consequent distortion of proportions and failure to allow the design to stand forth against a plain background. Thus, in Maya sculptures the head, with its elaborate head-dress, may occupy over one-third of the total height of the figure because these were the vehicles principally employed to convey full identification of the deity portrayed and of the "aspect" it was desired to present (Plates 9, 11). At first this disproportion strikes our Western eyes as uncouth and lacking in æsthetic sensibility, but as we grow accustomed to Maya conventions, we come to accept them as natural.

The principal personage on a Maya stela is a typical product of convention. He may have one of three positions: full face with feet turned out so that they are almost in a straight line, heel to heel; or the head in profile and the body full face; or the whole figure in profile (Plates 9-15). These stiff and awkward postures must not be considered symptoms of immaturity. They surely were demanded by tradition and represent a rigid adherence to a style of religious portraiture evolved before Maya sculptors had mastered the art of foreshortening. This is not surprising, for religious art throughout the ages has tended to adhere to the canons of past usage. That the Maya were perfectly capable of foreshortening and of giving tremendous vitality to their subject matter is seen in the subsidiary figures on monuments or in the more secular art of the murals (Fig. 7, page 90; Fig. 16, page 207). The artist had to treat the principal god on a monument with restraint and in the traditional static manner; he was not stifled by religious convention in carving the subsidiary figures, and so could lavish all his skill upon them. He makes them clamber around entwined snakes or peer like startled fawns from behind a cornstalk (Fig. 19*a*, page 239). In mediæval art we find the same situation: the saint is conventionally posed in his niche; demons and representatives of the European bestiary riot on hidden misericords.

Maya sculptors seldom failed to achieve an effective balance in their compositions, although occasionally the symmetry was a little too patent, as in the tablets at Palenque, where a central motif is flanked by individuals of almost equal size, and they, in turn, by columns of glyphs of the same length and breadth. Generally, however, columns of glyphs are used to counter disharmonic groupings. Where a smaller figure faces a larger one, a mass of

glyph blocks above the former restores the balance. Many sculptures have a subsidiary quality of diagonalism which is produced by the two-headed dragon element, called the ceremonial bar, which many personages carry at a cant across their breasts. This introduces a secondary axis; the head-dress with its sweeping feathers and massed masks at the top right corner and a kneeling captive in the bottom left corner often counter it (Plate 12*a*). Differences of size do not indicate perspective, but rank; the god to whom a monument is dedicated is large, but the captive about to be offered to him in sacrifice may be less than half his size.

Depth was sometimes achieved by combining high with low relief, so that the principal figure stands out against a background of low relief or of incised work, and a three-dimensional quality was achieved in low-relief sculpture by allowing details of the design to overflow the frame. The Maya obtained some fine effects by the manipulation of the plumage of head-dresses. This is noticeable in their treatment of the long quetzal feathers they prized so highly, particularly in the way they broke long sweeps by carving one or two feathers with a forward swirl, as though ruffled by a breeze (Plates 9, 12*a*; Fig. 3*d*, page 40; Fig. 10*b*, page 121).

Maya sculptural portraiture with its static quality and its innate conservatism conveys a message of calm self-assurance; it clearly reflects the temperament of a group that had chosen a philosophy of life in which moderation, orderliness, and dignity were dominant. It contrasts strongly with the restless art of the Mexican Period, as exemplified by Itza sculptures at Chichen Itza. Never-ending lines of warriors, as awkwardly grouped as figures on an old-style fashion plate, face in toward an altar, or sun disc, or feathered serpent. There is an incredible stiffness in their poses, and a depressing monotony in their dress and weapons (Plate 14*c*). Feathered serpents, sun gods peering down from sun discs as they hungrily await their sustenance of human hearts and blood, feathered dragons, and supporters of the heavens are repeated *ad nauseam* (Figs. 9*a*, *c*, page 109; Fig. 10, page 121).

The creators of mediæval Christian art worked to the greater glory of God and to instruct the people in the fundamentals of the faith and in the lives of the saints; stained-glass windows, sculptures, and paintings were the catechisms and Bibles of the unlettered. Maya sculpture and painting, however, were not for the instruction of the layman, since they served largely to adorn the

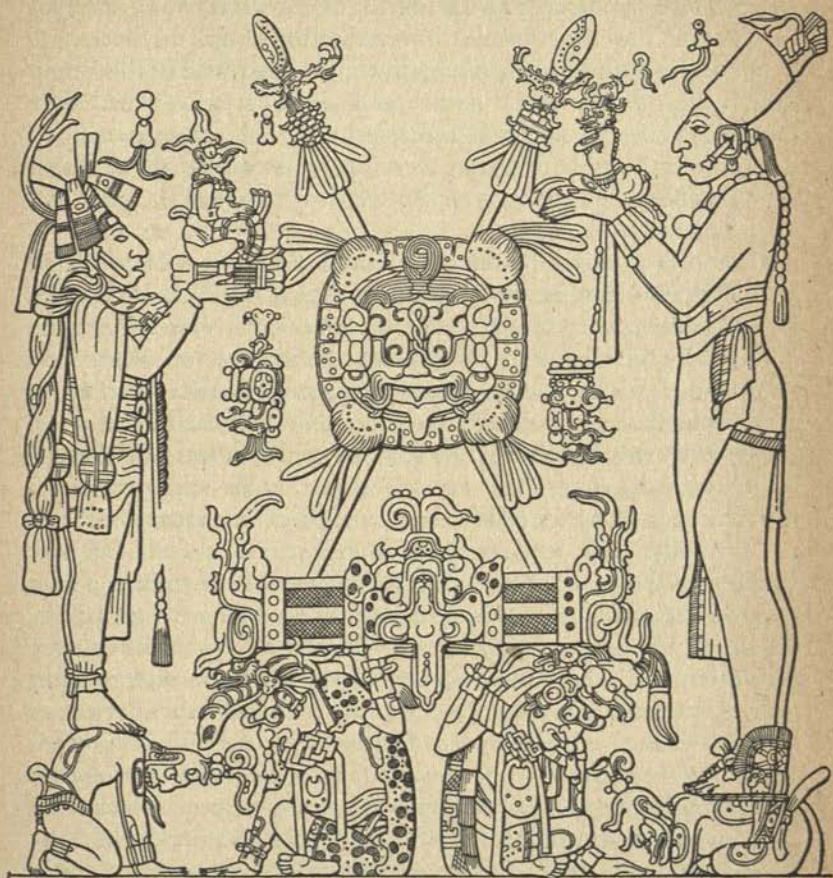


FIG. 14.—Sculptured Design at Palenque.

A shield with the face of the jaguar god of the interior of the earth is supported by crossed spears. Two crouching figures with the features of the same god support what is probably the surface of the earth. The scene is flanked by Maya priests standing on subordinate figures. The accompanying hieroglyphs (not shown) indicate that the relief was probably erected in A.D. 692. (*After Maudslay.*)

temples and other religious buildings to which the public did not have access. Much of the symbolism on the façades of temples could not have been made out by a person standing in the court, and because of lack of space, if for no other reason, we can be sure the peasant was not allowed to ascend to the temples. Moreover, many of the sculptural representations, such as those of the Venus god, were of an esoteric nature and almost certainly had little meaning to the peasant whose interest and affection were centred on gods of the soil. We can, therefore, feel reasonably sure that such manifestations of art were for the delectation of the gods and of the hierarchy.

In contrast to sculptural representation, Maya murals of the Classic Period have remarkable animation. The artist, unshackled by the conventions of the stela cult, reveals his mastery of problems of grouping and of difficult techniques, such as foreshortening. Scale is not important; a man may be taller than a hut, and in one case marine shells are more than half the size of trees. Perspective was handled by an upward continuation of the scene to indicate distance. The figures discard their stiff poses; the movement and chatter of life are reproduced with amazing charm and vivacity. On the murals of Bonampak one feels that the warrior on the point of thrusting with his stabbing spear is a man one would not like to encounter with no better weapon; the prisoner, whose hair is grasped by the chief (symbol of capture throughout Middle America), obviously lacks the will to fight (Fig. 6, page 87). In the adjacent mural the dead man sprawls on the steps of the high platform in a natural posture which is not unworthy of the brush of Michelangelo (Fig. 7, page 90). The terror-stricken prisoner pleads before his captors in a scene which with stark realism contrasts pride and abjection. Nowhere in the New World is there anything comparable to these murals painted about A.D. 800 in a small temple at Bonampak, a relatively unimportant city in the forests of Chiapas. Why the walls of this temple in a city which was probably a dependency of Yaxchilan were ablaze with colour and life, whereas the walls of most Maya temples in far more important cities were covered with unpainted plaster, is a mystery we are never likely to solve.

Mural painting is not common in the Maya area. There are some interesting scenes at Uaxactun, and on a late building at Santa Rita, British Honduras, and at Tulum (one mural there has a black background, giving an effect of negative painting). There is

a scattering of others at Palenque and two or three sites in Yucatan. The last include murals at Chichen Itza of the Mexican Period, which are interesting in their subject matter (Plate 17*a*), but lack the vivacity of the murals of Bonampak or Uaxactun, or what remains of scenes of everyday life at Palenque. Pigments so far identified are: red and pink, red iron oxide; yellow, hydrous iron oxide, much the same as ochre; black, carbon; blue, beidelite; green, a mixture of yellow and blue.

With the murals should be studied pottery vessels painted with life scenes. There again the scenes are animate. Consider, for instance, the striding figure with spear in hand on a vase from the Alta Verapaz, or the attendant on another vessel from the same region. The first is a-quiver with life; the second watches with intent concentration the scene before him. Enjoy the qualities almost of abstraction in the plunging jaguar, or the gentle satire in the scene representing the chief being carried in his litter, for with his treatment of the arms holding the upraised fan, the artist hints at pomposity.

In modelled pottery (largely used for incense-burning) Maya artists achieve another triumph. Consider the "Punch" (he is hump-backed) from an early classic burial at Kaminaljuyu (Plate 19*d*). Tremendous vitality is achieved by the treatment of eyes and the lines around the mouth. It is difficult to realize that this caricature was taken from the kiln nearly 1,400 years ago. The two figures on a vessel from the Regional Museum of Chiapas represent a combination of modelling and appliqué. Arms, legs, and ornaments are stylized, in contrast to the refined treatment of the faces (Plate 19*c*).

Pottery figurines, many of which are hollow and made to serve as whistles, also bear witness to the heights reached by Maya plastic art (Plate 20). Some are portraits in the sculptural tradition, but others are vivid scenes of everyday life—for the man the excitement of hunting, for the woman the dull tasks of grinding corn and tending children. These were made in pottery moulds and belong to the late Classic Period; simple handmade figurines were common in the first stages of the Formative Period.

Changes of shape, decoration, and temper in pottery are among the most important tools of the archaeologist in reconstructing history, but they make dull reading for the non-ceramist. In general, the sequence runs thus: Formative Period, of excellently made monochrome wares (two-colour and occasional polychrome

decoration in the Guatemala highlands); early Classic Period, polychrome wares in the Peten; late Classic Period, life scenes (Plate 18) and also geometric designs; very late Classic, carved pottery which was often made in two-piece moulds (Fig. 16*a*, page 207); Mexican Period, great falling off in pottery, which was largely monochrome; Period of Mexican Absorption, pottery continues to degenerate. Generally speaking, Yucatan and the Guatemalan highlands, excluding the northern parts adjacent to the Central area, produced little polychrome pottery at any time.

Trade in pottery was brisk between various parts of the Maya area and also with non-Maya regions. Such commerce was active even in the Formative Period. Burials at Kaminaljuyu of the early Classic Period contained many trade pieces from central Mexico (Plate 19*b*) as well as a few from the Peten.

In late Classic times there appears a remarkable pottery, called plumbate, the only glazed ware in Middle America. At that time it was made only in simple forms and was traded over southern Guatemala and adjacent parts of Chiapas. There seems no doubt that it was manufactured in only one place, almost surely near the present boundary of Guatemala and that part of southern Chiapas called Soconusco. From the fact that some later forms of the ware depict not Maya, but Mexican, gods, we can be reasonably sure that the makers were not of Maya speech. Early in the Mexican Period (*circa* A.D. 1000) new forms of plumbate, often with figures of gods and animals (Plate 19*a*), became extremely popular, and were traded as far north as Tepic, in north-western Mexico, and as far south as Nicaragua. Many pieces reached Yucatan, and others travelled as far as Tula and central Veracruz, but the larger part was sent to areas nearer the centre of manufacture, such as the Guatemalan highlands and western El Salvador. Plumbate pottery ceased to be traded about A.D. 1200; no pieces are found associated with Aztec deposits, and pottery is not even mentioned in the Aztec list of tribute paid by Soconusco. Plumbate ware, apart from its technical qualities (it was fired at much higher temperatures than the calcite tempered wares of the Peten which disintegrate at temperatures of over 600 degrees) is for archæologists an "index fossil", for it places pottery of local types, artifacts, or buildings with which it is clearly associated somewhere in the eleventh or twelfth centuries, and establishes contemporaneity for local horizons in distant cities.

Another archæological index fossil is a pottery called thin

orange, which has been found at Teotihuacan, Kaminaljuyu, Monte Alban, and other sites, and was manufactured at some unknown centre, probably in central Mexico, in the early Classic Period. It, too, is completely absent in later horizons (Plate 19*b*). Other types of pottery, such as varieties of fine orange, were widely distributed; the presence of Yucatecan slate ware at San José, British Honduras, has been mentioned (p. 84).

Objects sometimes or invariably made of pottery included idols, incense-burners, braziers, drain-pipes, boxes to hold offerings (rare), drums, flutes, whistles, earplugs, beads, perhaps net sinkers, stamps, moulds, griddles, and, of course, vessels of all kinds.

Gourds are still used extensively by the Maya. Semicircular ones (tree gourds sliced in half, with the pulp removed) are used as drinking-cups; large gourds with a cloth over the mouth keep newly made tortillas hot for serving. In Yucatan queer eight-shaped gourds are carried as canteens by means of a cord twisted around the waist of the gourd and passed over the man's shoulder.

In the Guatemalan highlands gourds are painted or decorated with designs in poker work or blackened with soot and then varnished, all of which techniques are probably pre-Columbian. Painted gourds were used in sixteenth-century Yucatan, and probably some were lacquered, a process known to the Maya, but none have survived.

Of carved wood, the finest survivals are the magnificent sapodilla lintels and ceilings of Tikal and Tzibanche. The delicacy with which the hieroglyphs and religious scenes are worked is truly amazing. A few fragments of carved wood, such as spear-throwers, dredged from the sacred cenote at Chichen Itza, only serve to make us realize that a treasure of art has been lost to us through the action of time and climate.

Except for a few dispiriting fragments, principally from the cenote of sacrifice at Chichen Itza, where the mud had preserved them, no Maya cotton textiles have survived. This is most unfortunate, as stelæ and murals show persons wearing fabrics with very beautiful designs (Plate 12). Not one fragment of a feathered cloak has been preserved, and the magnificent plumage of head-dresses is known only in relief sculpture and painting. It is a pity that in the Maya area there is no arid region comparable to the coast of Peru which would have saved such treasures. The archæologist who comes upon an important Maya tomb rejoices in the jades, shellwork, and painted or carved pottery, but he is

depressed at the thought that these represent but a small proportion of the owner's possessions. The textiles and elaborate head-dresses, the featherwork, the carved boxes and lacquered gourds, the leatherwork and the fine basketry, the shields and the stools, and all the other household possessions and personal treasures are no more. A wealth of artistic treasure has turned to dust. Nevertheless, we need not complain; in sculpture and mural the Maya have left us a greater legacy of beauty than most peoples achieve in the whole range of arts and crafts.

Designs on *huipil* blouses used by present-day Maya women of the highlands look like embroidery, but generally are brocade work; that is to say, they are worked into the warp as the textile is being woven. This technique is probably ancient. So, almost certainly, is that of tie-dyeing, a process in which the thread of the finished cloth is firmly tied at intervals so that when it is dipped in dye, the wrapped sections remain untouched. Tapestry work was probably as common among the Maya as it was in ancient Peru. Quilting was certainly practised, and a muslin was made in early Colonial times in the highlands of Guatemala and is still woven by the Kekchi Maya. Early Spanish writers report that feathers were woven into garments worn by members of the nobility, and this is confirmed by many Maya sculptures.

Weaving to the Maya woman was a sacred undertaking, just as the working of his land was to her husband. Indeed, women of the Guatemala highlands still offer a prayer before starting to weave a new textile. It was not chance that the moon goddess, the special patroness of women, was credited with the invention of weaving. Weaving, too, had a communal or social aspect, for Yucatec women met to do this work in a building set aside for that purpose.

Sisal fibre (the modern henequen) and the related *ixtli* (fibre of one of the aloes) were extensively used for rope, nets, and carrying-bags, as well as clothing. Peasants probably wore little else, for there are hints that the wearing of cotton garments was a prerogative of the ruling class. Bark cloth, sometimes with designs painted on it, was also used. The inner bark of certain trees, particularly the wild fig, was immersed in water and then pounded till soft and flexible. Holes that developed were mended by placing patches over them and pounding the cloth afresh. Bark cloth is still made by the Lacandon. Stone pounders believed to have been used in its preparation are frequently encountered.

Maya skill and artistry are well illustrated in the carving of jade. That intractable material so highly prized by all peoples of Middle America presented a challenge to the Maya craftsman which he was not slow to accept, for some of the low-relief designs on jades are among the most beautiful products of the lapidary's skill to be found anywhere in the world (Plate 21). The people of La Venta culture also worked beautiful jade, but their best products are in the round and usually without any detail of costume or head-dress, whereas the finest Maya work is in low relief with intricate treatment of accessories.

The production of a jade pendant must have required infinite patience and labour. Sawing with a thin wooden implement and quartz sand and drilling with both solid and tubular drills, perhaps of hard wood, seem to have been the two preliminary methods. Tubular drill marks in the back of a jade head from British Honduras show how the area was hollowed: cones were drilled and removed and then the intervening masses broken away. Final carving and polishing must have presented even more difficult problems to the lapidary. The water-worn appearance of many uncut surfaces is evidence that jade was obtained from streams.

The Maya, overfond of painting the lily, often covered jades with a red powder, obtained from cinnabar. The finest carved jades have been found in the Alta Verapaz and Chiapas; in the Peten and in Yucatan they are quite scarce except for those (ceremonially broken) which have been dredged from the sacrificial cenote at Chichen Itza. Most of these had been imported.

Discs with mosaic designs picked out in contrastingly coloured fragments of turquoise and jade have been found on offertories of the Mexican Period at Chichen Itza, and a necklace of turquoise beads came from a burial there of the same period. Another grave, at Zaculeu in the western highlands of Guatemala, shown by the presence of plumbate pottery to be of the Mexican Period, had many tiny pieces of turquoise, presumably once a mosaic. These dated finds, together with the absence of turquoise from sites of the Classic Period, bear witness that this stone came into use in the Mexican Period; Aztec tribute lists indicate that it was mined in north-western Oaxaca and central Veracruz.

Vases of *tecali* (Mexican onyx) from the Puebla-Veracruz area and marble vases with beautiful designs from the eastern frontier of the Maya in Honduras were imported.

The finest flint points of the Maya about equal those of ancient Egypt (Plate 22*c*). Both peoples obtained those extraordinarily thin leaf-shaped blades with their beautifully rippled surfaces by gentle pressure, not by blows. Inserted in wooden hafts, these blades made excellent daggers or spear points, but the most interesting examples of flintwork are the so-called eccentric flints (Plate 22*a, b, d*), frequently found in offertory caches beneath stelæ or temples (often in groups of nine). They may be of non-naturalistic shapes, such as crescents or rings, or, more rarely, they are of life forms. The latter include alert dogs, well-executed but slightly impressionistic representations of scorpions, and full-length human figures. Profiles of gods chipped on the sides of flints in the idealized style of Maya beauty bear witness to the craftsman's thorough mastery of his material. These objects can have had no utilitarian purpose; their ceremonial use is unknown.

Flint occurs abundantly in limestone beds in the lowlands, but it is rare in the highlands. In compensation, the highlands yield plentiful supplies of obsidian, which is not found in the lowlands. Thin blades of obsidian, approximately of the size and shape of the blade of a penknife, were struck off oval cores by pressing with a stick or antler at the top. These blades were ready for use as they sprang off the core, and needed no retouching, for both edges were exceedingly sharp.

The volcanic glass, for such is obsidian, is so fragile that these blades were quickly blunted through accidental chipping of the edges. In the highlands used blades could be discarded in rapid succession, for they could be quickly replaced; in the lowlands they must have been used with more care since they had been brought long distances by traders (the nearest large obsidian deposit to the eastern lowlands is probably that near Zacapa, 'twixt highlands and lowlands).

Large pieces of obsidian, like flints, were fashioned as leaf-shaped points by pressure flaking. Obsidian was also worked into "eccentric" shapes. Portraits of gods and geometric designs engraved on obsidian have been encountered at Tikal and Uaxactun, but as yet at no other Maya site. The finest obsidian piece yet found in the Maya area is in the form of a handled axe, nearly a foot long (Plate 22*e*). The handle had been partially covered with painted stucco. As a weapon it would have been absolutely useless, since with one hard blow it would have shattered, but as it

was in an offertory cache, we can be reasonably sure that it was designed only for ceremonial use.

Pentagonal and hexagonal pieces of iron pyrites were carefully fitted together on a sandstone or slate backing, which was usually circular, to form mirrors. These were probably worn as ornaments, for they are provided with holes for suspension, and it is known that mirrors were worn on the back of the belt by the Huastec and other peoples of Mexico.

Iron pyrites were also fashioned as beads and were occasionally used in place of jade or obsidian as decorative fillings of human teeth.

As already emphasized, metals came into use only at, or immediately after, the close of the Classic Period, and then only to a limited extent. Even at the time of the Spanish Conquest, centuries later, metal objects were still remarkably scarce in the lowlands, for all had to be imported. A great part of the scant finds of metal from the Maya area was dredged from the cenote at Chichen Itza, into which they had been cast as offerings. The objects are of copper, bronze, and gold. Most gold pieces are recognizable by their style or by the percentage of gold content as imports from Panama. These comprise ornaments of sheet gold and pendants and bells of cast gold.

Most spectacular of the finds at Chichen Itza are a few thin discs of sheet gold imported from Panama and embossed locally with scenes depicting the Toltec triumphs over the local Maya (Fig. 10b, page 121).

The commonest metal objects from the cenote or elsewhere in Middle America are small bells of copper or bronze (it is not certain whether the alloy is natural or deliberate) of Mexican workmanship. They were cast, and from Spanish sources we know that the Mexicans used moulds of charcoal mixed with clay which could be easily cut. Clappers are usually pebbles just too large to slip through the narrow apertures at the base of the well. Usually the bells are pear-shaped, an inch to two inches long, or button-shaped; many are decorated with simple designs, and all have small loops at the top. Numbers of these bells were attached by the loops to anklets and wristlets to jingle when the wearer walked or danced. Eight hundred of them, perhaps cached by a trader for safety, were found in a cave in Honduras.

The sacred cenote has also yielded cups, sandals, a bracelet, earplugs, and miscellaneous objects of copper which had been

given a very thin coating of gold. Rarely, copper objects from Guatemala are also gilded. Copper rings also have been dredged from the sacred cenote, and they, too, have been found occasionally in other parts of the Maya area.

Copper celts were used to a limited extent at the time of the Spanish Conquest and had a secondary use as a form of currency. A few, broken and discarded, have been found in open country, confirming Spanish accounts that they served for felling trees to clear land for planting. Copper tweezers, seemingly used to pluck hair from face and body and apparently imitating bivalve shells, occasionally appear. A copper fish hook has been found in Honduras, and gold fish-hooks are said to have been used. Only one copper arrowhead has been reported from the lowlands. It was on the floor of a very late building at Chichen Itza. An interesting discovery in western British Honduras comprised some shell beads, the bores of which were lined with copper tubing.

Finds of metal are also infrequent in the Guatemalan highlands. Most spectacular are two gold discs with embossed heads of the Mexican rain god, Tlaloc, and the head of a bird (from Zaculeu) cast in copper and and painted red, blue, and green, a most unusual treatment. We are told that Alvarado, ruthless conqueror of Guatemala, cut gold earplugs from the ears of three Quiche noblemen!

These objects of metal bear witness not to the skill of the Maya since almost all are known or suspected to be of foreign workmanship, but to the active trade which was carried on between the Maya and their neighbours.

On the whole the Maya were not much interested in decorating shell. There are a few pieces competently incised with hieroglyphs, simple scenes, or geometric designs, there is one charming design from the very beginning of the Classic Period, and a superb piece of carved mother of pearl which was found at distant Tula, but is clearly of Maya workmanship. Shell was cut and drilled to serve as earplugs, beads, and pendants, for inlay work, and as ornaments on clothing. Pearls, never in large numbers, appear rather rarely in caches and burials. The spiny *Spondylus* shell of the Pacific was highly prized, and beads cut from it so as to show the pink colour served as currency. Pairs of these shells, used as jewel-boxes and holding jades, sometimes occur in offertory caches beneath stelæ or temple floors. Conch shells, with the tops sliced off, were used as trumpets. *Oliva* shells with the spiral tops



FIG. 15.—Scene from Stela 11, Yaxchilan.

Three persons, probably prisoners to be sacrificed, kneel before a richly clad individual who wears a mask of the long-nosed god. Note the elaborate headdress, the pectoral, belt, and kilt of jaguar skin. The stela was erected to commemorate an event in A.D. 732.

cut off and with suspension holes, drilled or sawed across, are common in burials. They were attached to clothing so that they knocked together and emitted a rattling sound. They are thus shown on many stelæ.

Carved bone is rather rare, but a few exquisite pieces have been uncovered. Bone was used for making such implements as needles and awls. Sting-ray spines often occur in burials; they were used for drawing blood from the body in sacrificial rites. The incised skull from a burial at Kaminaljuyu, probably a trophy (Fig. 20*b*, page 255), is a unique piece.



Arts and crafts fell upon evil days at the end of the Classic Period, for, with the overthrow of the hierarchy, the artist was without an employer. I like to think of the high priests and rulers of the Classic Period as New World patrons of the arts, but in the Mexican Period there can have been no Lorenzo the Magnificent. The same decadence is apparent in the intellectual life of the Mexican Period, for the conquests in astronomy and arithmetic belong exclusively to the Classic Era. From Maya writings in the Books of Chilam Balam one gets the impression that those who held to the old Maya way of life had to go underground during the rule of the alien Itza and their successors.

Decadence is most marked during the period of Mayapan's domination and in the century before the Spanish Conquest. Excavation at Mayapan has brought to light only sculptured stones

which are crude in design and execution. The pottery vessels are almost entirely monochrome and usually of a coarse red ware. The polychrome vessels of the Classic Period, with their painted scenes, had no successors in the warrior state. Architecture was showy but of poor workmanship.

V. Sketches of Maya Life



*We have short time to stay, as you,
We have as short a spring;
As quick a growth to meet decay
As you, or any thing.*

*We die
As your hours do, and dry
Away*

*Like to the summer's rain,
Or as the pearls of morning dew
Ne'er to be found again.*

—Robert Herrick, *To Daffodils*

PREAMBLE

IN THIS chapter I have brought together a series of miniatures of Maya life, each in a fictional setting, in an effort to give quickening colour to the dead past. I submitted one of these sketches to a well-known anthropologist who was inexpressibly shocked at the mingling of fiction with science; the deep impress of the typed words on the sheet of paper showed how upset he was that science should be draped in such intangibles as thought processes not susceptible to tabulation or graphing. If I shared his belief that archæology is a science, I might feel a trifle uneasy, but, regarding archæology as a backward projection of history, I see no reason why such reconstructions should not be used. Thomas Carlyle might have been hard put to it to give chapter and verse for thoughts he attributed to the chief actors in *The French Revolution*, but those thoughts gave life to the panorama of action he painted. Other historians have used the fictional approach in varying intensity, and with such precedents there can be little need to justify my approach.

The characters in these sketches are purely fictitious; their actions are largely derived from information we possess on Maya life. Some incidents are drawn from Aztec or other Mexican sources, but the religious ideas of the peoples of central Mexico seem to have been so close to those of the Maya that there is, in general, justification for supposing that certain of their rites were

prevalent also among the Maya, although chance has decreed that no record of them has survived. To illustrate what I mean, the incident in "The Novice" in which Ah Balam and his young friend are the front and hind legs of a celestial dragon is my invention. The grounds for it are these: 1. Celestial dragons are important Maya deities and occur everywhere in Maya religious art. 2. Among the Aztec, men dressed up as celestial dragons to participate in certain ceremonies. 3. The Maya wore masks to impersonate gods. 4. It is reasonable to assume, in view of points 1-3, that the Maya also impersonated celestial dragons in their ceremonies. Again, in this story offerings are deposited beneath the stela at a certain point in the ceremony. The depositing of the offering is fact; the moment in the ceremonial context is fiction.

In thought-processes I have tried to keep as close as possible to Maya mentality as revealed in sixteenth- and seventeenth-century sources, and as observed by me while living among the Maya of British Honduras—a good deal of "The Daily Round" is based on such observation. I suppose it is impossible to avoid projecting one's own personality into fictional characters, but the reader, forewarned, can make his own reservations. Because the settings vary in time and space, continuity of characters had to be sacrificed.

Finally, it should be noted that there are anticipatory references to certain ceremonies or customs detailed later in the book.

THE NOVICE

Young Balam ached all over. His tongue was swollen; the lobes of his ears, his arms, and other parts of his body were tender from drawing blood from them continuously. Also he was hungry and worn from lack of sleep. For eighty days, from 13 Xul, all through the months Yaxkin, Mol, Ch'en, and over half of Yax, he had fasted, tended the temple, kept vigils, and made sacrifices of his own blood. In another three or four hours all this would be ended, for by then he and everyone else in the world would have been destroyed, or he would be sitting down to a feast, the anticipation of which kept coming to him when his thoughts should have been on more serious matters. Still, it was difficult not to look forward to turkey and venison stewed with sweet potatoes, when for so long one had eaten nothing but very skimpy tortillas, and drunk only weak corn gruel.

It was now about three hours before sunset of the day 4 Ahau

13 Yax. The fifteenth katun (twenty-year period) of Cycle 10 (9.15.0.0.0, 4 Ahau 13 Yak) would end at sunset. This was three-quarters of the way through Cycle 10 (we speak of this as Cycle 9, but to the Maya it was Cycle 10), and the day was the lucky 4 Ahau. That alone was of good augury, but Yax was the month of the planet of Venus, and that baleful god would be visible at sunset, blazing high in the evening sky. In another four months he would be lost in the sun's rays before reappearing as morning star. Everyone knew that the world would be destroyed at the end of a katun; the real question was whether this particular one was the appointed one; favourable and unfavourable factors seemed about equally balanced. Extra care in the performance of every bit of the ritual might save the day.

The first of the big ceremonies was about to start. Today, as on every day 4 Ahau, the fire-walking ceremony was to be held, and, in addition, persons were to be sacrificed to the god Venus, since he was the patron of this month in which the katun closed. Balam should get a ringside seat at these ceremonies, since he was to be the front legs and head of the sky monster of the east.

From the building where they were living during this period of fasting and preparation, he and his fellow novitiates had seen fire set to the great pile of wood stacked in the court before the temple of the rain gods, and the heat from the blaze had been terrific. Now the attendants had just finished spreading the glowing embers with long poles of green wood to form a field of fire. Inside the temple, the four priests who were to walk the fire had completed their prayers and offerings of copal incense and *balche* (a mead drink). As Balam and his friends watched, they came out one behind the other, stooping as they emerged so that their high masks and head-dresses would not catch against the lintel of the doorway. Slowly they descended the steep stairway.

At the head of the little procession came the high priest, dressed in red as the red rain god of the east, but with his head-dress, enshrining the long-nosed mask of the rain god Chac, bedecked with a mass of quetzal plumage, green to represent the greenness of young corn and the new leaves on the trees, verdure which the rains would bring. Behind him in order followed the Chacs of the north, west, and south, all wearing similar head-dresses, but dressed respectively in white, black, and yellow. Each carried in his right hand an axe with stone blade set in a wooden haft, the end of which curled up to form a snake's head. Each had in the

left hand a zigzag stick symbolizing the lightning, and, slung from one shoulder, a calabash of water, from which the rain gods sprinkle the rain.

At the edge of the field of glowing embers, the little party halted, and sandals were removed. The high priest took a bowl of burning copal and a gourd of *balche* from an attendant, and turning to the east, offered both to the red Chac. Then, picking up an aspergillum formed of the rattles of rattlesnakes, he started without hesitation to walk across the carpet of live coals, dipping the aspergillum in the bowl of *balche*, and sprinkling the embers with it as he advanced. Reaching the far side, he paused a moment and then started on the return journey. Safely back at the starting point and seemingly unharmed by the fire, he offered copal and *balche* once more to the east, and then drank the *balche* remaining in the gourd.

In turn the impersonators of the white, black, and yellow Chacs went through the same procedure. Balam watched the performance of the white Chac with particular attention. This priest was unpopular with the young men training for holy orders, and Balam found himself half wishing that he would slip and get badly burned. He put the idea away, for it was not seemly that such thoughts should occupy one's attention on such a solemn occasion, and such a misadventure would mean the failure of the ceremony, with the consequence that the dissatisfied gods would deny the people rain.

Balam could not wait to see the conclusion of the ceremony, for he had to make ready for his part in the ritual to mark the end of the katun. Inside the hut the four great frames of wood, covered with bark cloth and bedecked with plumage to represent the sky monsters, had been placed ready to mount. Balam moved to the red one, which he and his friend Tutz were to wear. He put his feet in the forelegs of the monster and thrust his head through the throat and into the open jaws, taking care not to scratch himself against the huge fangs. Tutz did the same for the rear part of the monster. Poles resting on the shoulders of the young men held rigid between them the creature's long body.

The master of ceremonial paraphernalia inspected the two youths and, satisfied, placed masks on both of them. That of Balam had slits for his eyes so that he could see where he was going; Tutz was not so lucky. His mask was put on front to back, for it must appear as emerging from the rear head of the monster,

whereas Tutz faced front, and eyepieces would have been useless to him. They would only have given him a close-up of the monster's rear throat.

At a signal from the master of the paraphernalia, the four pairs of young men lined up in single file, Balam and Tutz with their red monster of the east heading the line. Their movements had been rehearsed several times, and Balam knew exactly what to do when the order to start was given.

The four monsters emerged one after the other from the hut, and, crossing the court down a corridor kept clear of squatting on-lookers, they passed slowly up the great stairway of the pyramid of the Temple of Venus. At every few paces the bearers made short barking noises to represent the alligator's call. Arriving at the platform before the temple on the summit, Balam and Tutz wheeled to the east, and the other monsters placed themselves on the north, west, and south sides of the open spaces. As they faced in, Balam had a splendid view of the proceedings; Tutz, of course, was unable to see anything, and soon began to find the weight of the frame on his shoulders and the heavy mask on his head irksome.

The high priest and his three assistants had doffed their costumes of rain gods and now were inside the Temple of Venus, praying to him to spare the world from destruction. Attendants led up the stairway five young men who were to be sacrificed on the stone block standing before the temple. The victims appeared resigned; they had been given quantities of *balche* to purify them, and, incidentally, to give them courage. Furthermore, they firmly believed that they would be united with the gods to whom they were about to take the messages of the people.

Balam gazed at them curiously. Three of them did not have Maya features and were probably Olmec or Zoque slaves purchased some time ago from merchants from the Gulf of Mexico. Balam knew the fourth, a young man who had grown up as a slave in his father's household, a rather stupid youth who had been the butt of many a practical joke. There had been no need to convince him that his sacrifice was for his own glory; his simple faith had required no strengthening, and he seemed to anticipate with a subdued zeal his coming honour. The occasion had given him a dignity he had never before enjoyed. Terror was in the dark eyes of the fifth victim, a sculptor who was to pay with his life for a mistake he had made in copying the work-sheets for the glyphs on the stela about to be dedicated.

As the priests issued from the temple at the conclusion of their prayers, attendants brought forward one of the foreigners and placed him on the sacrificial stone. Two junior priests, called Chacs, held his feet; two, his hands (Fig. 10b, page 121). Assistant priests held smoking copal censers and sprinkled *balche* as the high priest with the long flint knife in his hand—"the hand of God", the Maya called it—advanced toward the victim, for in a ceremony of such importance only he could perform the sacrifice. Balam felt himself swept by a wave of emotion, in which impulses of elation, pity, and sadism were strangely mingled. The Olmec, his arms and legs curving down from the small of his back resting on the sacrificial stone, was between Balam and the sun, now low in the afternoon sky. His shadow on the stuccoed floor lay like the arc of a grotesque bow at Balam's feet.

The high priest, bending over the victim, struck a savage blow at the base of the left ribs. At the moment of impact the body gave a last convulsive jerk. The high priest wrenched out the heart and raised it above his head, facing toward the setting sun. His clothing was stained deep red and more blood had splattered his face. A second time the heart was raised to the west, the direction of the god Venus, who would soon be visible if the world were to be spared. A great shout arose from the congregation squatting in the court below as the priest walked to the edge of the platform, showing the heart to those assembled there.

The body was placed to one side as the second victim was brought forward and similarly dispatched, and then the third. The former slave of Balam's father was the fourth victim. Balam felt a certain shame that this simple, harmless youth should die. It was considered an honour to contribute a victim, but it would have been easier to bear had the man been sullen or had he shown bravado; this eager faith was upsetting. Balam averted his gaze, watching instead two flies that hovered around the gaping wound in the stomach of one dead man. He did not look to his front again until the shout of the crowd told him all was over.

The fifth man, who had revealed terror, struggled as he was brought forward, and had to be dragged to the block. Even after he had been thrown on it, and was tightly grasped in the requisite position, he continued to try to free himself. Balam frowned beneath his mask. Such conduct was unseemly, and by such ignominy the man was disregarding the welfare of the whole community, for such a spectacle must be offensive to the god

Venus. The man had already jeopardized the well-being of all by his careless carving of an error on the stela. Now he was once again upsetting the rhythm of the ritual. His struggles soon ended, however, and his body was placed beside those already sacrificed. The whole ceremony had taken but a few minutes.

Balam and Tutz moved forward to take their place in the procession. At the head walked the high priest and his three assistants. Behind came five more priests wearing masks of the Venus god, each carrying a bowl in which reposed one of the hearts of the sacrificial victims. The four sky monsters swung in behind them and were, in turn, followed by other priests with smoking censers of copal; junior priests and attendants, carrying offerings to be dedicated to the new stela, brought up the rear.

The procession passed down the stairway of the pyramid, across the court of the Venus Temple, passed the end of the ball court, and so into the great ceremonial court. A halt was made in front of the newly erected stela, which stood on the east side of the court. Because of its width, the court was still lighted by the rays of the setting sun. The blues, reds, yellows, and greens of the freshly applied stucco glowed in the soft light. At the foot of the monument a large hole, reaching to level with the base of the butt, stood ready to receive the offerings, stout transversal poles against the butt holding the mass of carved stone in position.

Balam and Tutz had to mount several steps of the pyramid, against the base of which the stela was set, in order to occupy their position to the east of the ceremony and still be visible. Thus overlooking the stela, Balam again had a full view of the proceedings. He was relieved that Tutz and he had made the difficult trip down and up the steep steps without mishap; it had taken many rehearsals to co-ordinate their movements. As soon as all were in their assigned positions, the priests, junior priests, attendants, and all the spectators gathered in the great court and squatted on their haunches. From bags they drew sharp points of obsidian and bundles of sticks all cut to the same size. The drums set at each corner of the great court were thudding to a slow rhythm. Gradually the tempo increased until the beats cascaded in the same sequence with great rapidity. Balam's pulse quickened to the pounding measure; he wanted to shout and dance. It was almost unbearable to have to stand motionless. Now the trumpets and rattles and conch shells were sounding and antlers were beating on turtle carapaces.

The high priest raised his hand as a signal to the assembly, and then, lowering it, plunged an obsidian point in quick succession into his tongue, the lobes of his ears, and the fleshy parts of his arms and legs. Every man, for there were no women present, did the same save the eight novices inside the sky monsters. Then the sticks were passed through the gashes.

The high priest and his attendants advanced in turn to the pit in front of the stela, and cast in the blood-smeared sticks and pieces of bark cloth on which the blood had dripped; the ordinary people arranged their bloody sticks on the ground before them. The music had slowed and died. The lower part of the stela was now in shadow.

In turn, the five impersonators of the Venus god approached, holding the bowls with the hearts in them. The high priest took a heart from each in order. He smeared the first over the face of the god carved on the front of the stela and then dropped it in the centre of the pit before the stela. The corners of the stela were rubbed in turn with the remaining four hearts, which were immediately dropped in the hole, one at each corner. As the high priest performed these acts, the assistants and junior priests squatted behind lines of braziers, from which rolls of smoke rose and, carried by the breath of evening wind, wreathed the stela. More attendants advanced carrying bundles of quetzal feathers, carved jades, finely worked flints, *balche*, food, and cacao beans. The high priest raised each offering in turn to the west and next to the stela, and then cast it into the pit.

When all the offerings had been deposited in the pit, attendants scooped earth into the cavity, and as soon as it had been tamped down, masons hurriedly laid a floor over it.

By then the sun was on the point of setting, and as it sank below the horizon, Balam could see the dim light of the god Venus growing brighter each minute; the world had been given respite from destruction for another twenty years. The day 5 Imix had started. He raised a hand and quietly jerked the pole resting on his right shoulder, the signal he had agreed to give Tutz if Venus was visible.

At a sign from the high priest, the drums began to beat a triumphant fast measure. The flutes joined in. Priests lighted a fire, and into it the men threw their bloodstained sticks and offerings of copal. Young men from the college hastily lighted pine torches in the blaze and ran with them to all the pyramids in the ceremonial

centre. Soon the court was ablaze with fires burning before every temple and stela. Other fires illumined the ball court and the market-place; on the outskirts light began to twinkle in the houses of the theocrats.

The assembly was beginning to disperse. The four sky monsters wended their way back to the storeroom of the masks. When the cumbrous masks and serpent bodies had been doffed, Balam's empty stomach reminded him of the feast that was to follow. Everyone was in a happy mood. The eighty days of tension were over, the ceremonies in which they had participated had been crowned with success, and the day 5 Imix had started without any untoward occurrence. Balam had completely forgotten his father's slave, whose heart now was buried at the base of the stela.

Tutz, who was barely seventeen, started some horseplay, catching the end of his partner's loincloth and twisting it round his leg in an effort to trip him. The keeper of the paraphernalia chided him half jokingly, to which Tutz replied that he was hard-hearted, "with a face like a tree-trunk", as the Maya saying goes. All laughed, for the master of the paraphernalia was known to everyone as one of the kindest of men.

When the two friends left the building, it was completely dark, and many of the fires had died down. They walked to the edge of the ceremonial centre, entering the residential quarter of the nobility. Frogs were croaking their monotonous chorus; drooping leaves of cohune palms were silhouetted against a sky silvered by a moon ten days old. Passing one house, the boys' nostrils caught the odour of turkey stewing in chile sauce. They quickened their pace.

THE DAILY ROUND

For Ix Zubin the day began a little before 4 A.M. After hurriedly making her morning ablutions, she squatted to blow on the ashes of last night's fire so that its flames would supply illumination. Next, carrying a heavy jar outside the door, she strained its contents, maize, lime, and water, through a colander, a simple affair made by punching holes in a gourd. As the lime-impregnated water sank into the ground, she washed the maize several times. The hulls, softened by many hours' immersion in lime and water, came loose easily, and soon the corn was ready for grinding on the *metate*.

She was not the only one at work. All over the hamlet the lights of fires flickered through the polework of the walls of huts, and the indescribable but, once heard, unforgettable *crie, crie, crie* of muller on grinding stone witnessed that she had risen no earlier than her neighbours. With rhythmic stroke she drove the muller forward over the corn; gradually the pile of dough increased. The pot of black beans, left from last night, was put on the fire, together with more wood to ensure a good supply of embers. Squatting by a smooth block of wood, she took some of the damp dough and began to flatten it with her fingers on a broad leaf.

The noise of patting and the soft rustle as the leaf was turned were the signal for her husband, Cuc, to rise. Dawn had not yet come, but as he stood in the doorway of the hut, his eye caught Venus blazing on the eastern horizon, reminding him that he planned to hunt that day. He re-entered the hut and sought his pottery incense-burner and some copal incense, neatly wrapped in corn husk. Stopping by the fire, he raided some of the embers his wife had just placed beneath the pottery griddle and put them in the incense burner. Setting the censer on the ground outside the hut, he squatted on his haunches behind it so that he faced the east. He prayed to the sun, the morning star, and Ah Ceh, god of the chase, that his hunting would be successful, excusing his wish to destroy life by explaining his need and his poverty, and promising not to kill more than he needed. As he prayed, he dropped pieces of the waxy copal on the embers, telling the gods that this was his gift to them—a humble gift, but, as they knew, he was not rich.

Re-entering the hut, he found the first of the tortillas, the round and very thin cakes of corn dough which his wife had been patting into shape on the leaf, on the hot griddle. Deftly Ix Zubin tossed those that were ready into a deep calabash, and placed a cloth over the mouth to keep them hot. Cuc sat on a low stool fashioned from a log, and, with a piping hot tortilla rolled to serve as a spoon, scooped some beans from the pot. Sprinkling a little chile on top, he started his breakfast, as his wife continued to shape the tortillas expertly and to keep them rotating on to the pottery griddle and thence to the calabash.

So far not a word had been exchanged. Custom demanded that the man be the first to speak, but Ix Zubin could contain herself no longer. With head turned, as though she were addressing the fire, she said, "I dreamed of a snake last night." A smile lit Cuc's face, for, as everyone knows, to dream of a snake means that a

baby is coming, and they had been married some time without any blessed event. Children were needed, for in a year or two Cuc would no longer be working with his father-in-law, but would have his own fields, and children were almost a necessity to help bring home corn and firewood and to aid their mother in the home. Furthermore, to be childless brought shame on a wife, and might bring about divorce. Cuc knew that already one or two catty women had whispered asides on the subject when Ix Zubin had stopped for a gossip while filling her water-jars at the stream.

His breakfast finished, Cuc took his bow and arrow, quiver, tump-line, and netted bag, and crossed to his father-in-law's hut. A grey band across the eastern sky, which had not yet reached as high as the morning star, showed that dawn was at hand. The time for the best hunting was passing, as one had a better chance of finding game in the hour before dawn. On the other hand, the day was Manik, day of the god of hunting.

As Cuc and his father-in-law left the hamlet, they paused at the eastern outskirts where a small shrine and a large pile of stones stood beside the path. Similar shrines were at the north, south, and west exits of the little settlement. These were dedicated to the gods set at the four sides of the earth and the sky. Both hunters placed a stone on the rock pile, and prayed briefly but earnestly to the red rain god of the east to send the now much-needed rain.

Near the village chances of getting game were slim, but not far from their milpa there was a small stretch of savannah, an area of poor, sandy soil, where only grass, pine, and a few scrubby trees and bushes grew. Cuc had burned off the patches of grass some time ago so that the deer might be attracted by the tender grass that would spring up in its place. They circled this place so as to approach it from the direction in which there was least danger of the wind's carrying their scent to any game that might be there. Two deer were, in fact, feeding near the centre of the patch of grassland. The two men carefully approached as close as they could, taking advantage of the cover afforded by clumps of pine and the low *nance* bush. Once within range, the older man took aim, and the arrow, flying straight, entered the deer near the heart. The wounded animal ran some distance and then collapsed. Cuc had not shot at the second deer, for he, like all Maya, knew that if one shot more than one needed, the gods of hunting would be annoyed and would not send game another time.

Cuc fished his fire-drill out of his netted bag, and started twirl-

ing one stick in a hole in the softer wood of the other. A few minutes later a thin wisp of smoke curled up from the dry punk, and hard blowing soon produced a flame. His father-in-law, meanwhile, had first propped up the dead deer and then collected some dry wood. A small fire was soon blazing, and as soon as some embers had formed, the older man placed them on a stone, and on top laid hunks of copal. As the black smoke, with its sweet scent strangely blended with a certain acidity, billowed up, he began to address the deer, and through it the god of hunting, begging the deer's pardon for having killed it, and explaining that, as the crops had not been too good that year, his family needed food.

When this little ceremony was concluded, the deer was cleaned and skinned, but that was not a difficult job. With an obsidian blade Cuc slit the skin on the underside from lip to tail and down the inside of the legs. Much of the skin could be loosened with the fist, but the head gave a little more trouble, and here more than one obsidian blade had to be used. The meat was cut up and suspended from the branches of a nearby tree so that it would be out of reach of animals.

These tasks had taken some time, and it was midday before the two men reached their milpa. They went to the temporary hut in the centre of the clearing, where tools were kept, and where later on corn would be stored in husk. Leaving their bows and arrows, quivers, and bags there, they set to work to weed around the hills of young corn. The men were pleased with its condition, despite the lack of rain. "Our Grace", the holy maize, was putting out healthy leaves, their greenness more vivid against the background of ash, blackened stumps, and charred trunks of the burnt field.

Soon after one o'clock Ix Zubin arrived with a bag of parched maize dough, which, mixed with water, assuaged their thirst and hunger at the same time. They had planned to carry home firewood, but now, with the deer to be loaded, only Ix Zubin would be free to do that job. She collected a heavy load and, tying it with strips of bark, set out for home with head bent forward to sustain the weight, borne by a tump-line across her forehead. The men worked till the middle of the afternoon, and then returned to the savannah to pick up the deer.

Arrived back at the village, Cuc produced his horn, a conch shell with its top sliced off, and holding it to the side of his mouth,

awoke the echoes of the hills with a series of long, low blasts. People, hearing the call of a successful hunt, hurried to the hut, where each family received a little of the meat. A haunch was sent to the village priest or medicine man, an important man in the village, but not of high rank in comparison with the priests at the ceremonial centre. The family's share of the meat was rather larger than usual, as a number of families had been summoned to work on pyramid building and were camped near the great ceremonial centre, eight miles distant.

Cuc bathed in the stream, changed his breech-clout and was ready for his evening meal by five o'clock. Ix Zubin had prepared deer-meat tamales, a great treat and, to top off the meal, chocolate mixed with ground maize and spiced with chile. This was also a rarity, for most of the cacao they harvested went to the priests and nobles, who drank it twice a day and exported the surplus to Yucatan, where it fetched a good price in embroidered mantles. Cuc ate alone, Ix Zubin waiting on him, as it is right and proper for any wife to do.

His dinner finished, Cuc got up from the low stool on which he sat and, leaving his wife to eat her meal, started for a stroll through the hamlet. He usually stopped at the hut of his friend Cantul for a few minutes' conversation, but hesitated to go there that night. Cantul's second son, a bright boy of eight and a general favourite with the hamlet, had been taken to the ceremonial centre three days ago. Tomorrow, together with several other children, he was to be sacrificed to the Chacs, the rain gods. Cantul was trying to hide his grief, and it would be better not to go there for fear of making things worse. The thought of that cheerful youngster's being sacrificed next day saddened Cuc. He pictured the boy's frightened and bewildered face peering out of the litter in which he would be carried, his healthy brown skin almost hidden under the mass of jade he would wear, and the mask of the rain god pressing heavily on his brow. It was only a few days since Cuc had helped him make a bow. Yet someone must be the victim; the corn needed rain, and the Chacs needed blood. Man must keep his bargains; the gods were generous, but they, too, needed strength for their work, and they would not, if they could, send their gifts to a people who were ungrateful. For two years the hamlet had not been called on to supply a candidate for sacrifice, and last time it had not cost them anything, as they had been able to hand over that stranger from Chetumal.

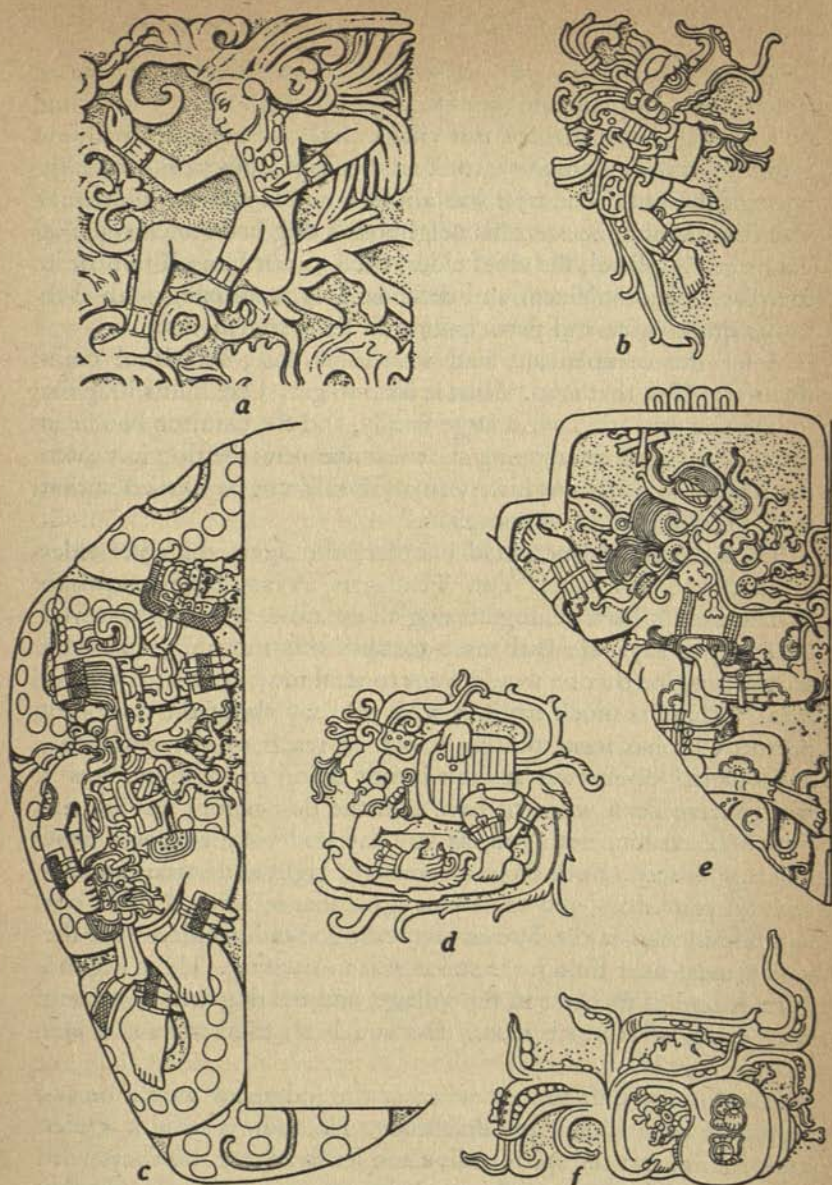


FIG. 16.—Animation in Portraiture of Gods.

Movement contrasts with the static quality usual in portraits of the gods. All are of stone except *a*, from a moulded pottery vessel, and all are late Classic Period (A.D. 680 to A.D. 800). *a*, The maize god (San José, British Honduras). *b*, *d*, Long-nosed rain god holds container from which rain pours (Zoomorph O, Quirigua). *c*, God in dancing posture in coils of snake (Altar O, Quirigua). *e*, Long-nosed god incised on fine-grained stone (Palenque). *f*, God emerging from conch shell holds maize plant, out of which grows the head of the maize god. (*b*, *d*, *f* after Maudslay).

With these thoughts in his mind, Cuc wandered to the communal hut, where the village elders were trying a case. Cuc, being one of the young men of the village and consequently without standing in the community, took an inconspicuous position at the back of the hut. The trial was about a minor matter. One man was complaining because his neighbour's dog had stolen some of his meat. Ah Buul, the chief elder, tried to put himself in turn in the place of complainant and defendant, sympathizing with each in his quiet voice and participating in their statements.

After the complainant had stated his case, Ah Buul commented: "Yes, that is so. Meat is hard to get. One hunts long for it. As you say, you have a large family, and the children had been looking forward to enjoying the meat and now the dog has eaten it. That is so. It is not just. A man should not be robbed in that way. You did right to complain."

Then the defendant stated his case, and again the chief elder sympathized with him: "Yes. That is so. A man has his work to do and cannot be watching his dog all the time. The dog was well fed, as you say. He had three tortillas this morning, and who would imagine that he would want to steal meat after such a good meal? There is much truth in what you say about the duty of a person who has meat putting it out of reach of any marauder, and our neighbour was at fault in not doing so. Sill, perhaps it would have been wiser to have tied the dog before leaving the hut or taken him with you, as you say that your wife was busy making pottery. Both of you have some right and some carelessness on your sides, and so, if you agree that it is fair, I think our neighbour who is the owner of the dog should replace half the stolen meat next time he is successful in hunting. He is a good hunter, one of the best in the village, and his dog will be strong after eating that much meat. Do you both think that is a just arrangement?"

Cuc did not wait to hear whether the judgment would be accepted by complainant and defendant. He knew it would. Quiet compromise and the spirit of live and let live were too deeply ingrained in his and his neighbours' characters to let him doubt the result. Everyone, and all the trees, the crops, and the animals had their rights. One must not violate these rights or try to take more than was his due. All such matters should be looked at from the other point of view as well as one's own.

Wandering back to his hut, Cuc found Ix Zubin steeping to-

morrow's corn in the jar of lime-water. In a corner of the hut was the load of pottery jars to be sold at the great market which would be held tomorrow after the sacrifice. It was time for bed. They would have to rise early, long before dawn, for it was the day on which the ceremony to the Chacs was to be held, and everyone in the hamlet would be going to the ceremonial centre to watch the sacrifice from the great court, and afterwards would visit the market. He wondered whether those traders from the highlands would be there. He hoped so, as he needed some more obsidian blades, but he was afraid he would not have much heart for bargaining for them with his cacao after seeing young Cantul sacrificed.

Cuc sighed. If Ix Zubin's dream came true, he hoped that their child would never be chosen for sacrifice, but, if it were, he hoped that he would receive the blow in the same quiet way Cantul had; it was unbecoming to show grief when the needs of the gods affected one personally.

The frogs were croaking. Perhaps rain was on the way. He must remember to get some rushes so Ix Zubin could mend the bed mat.

THE ARCHITECT AT CHICHEN ITZA

Ah Haleb, master architect at Chichen Itza, had a busy day ahead of him. Like many a successful man before and after him, he fully realized that if you want a thing well done, you must be on the spot to see that your instructions are properly followed. In his case this would mean being at half a dozen places at the same time.

As he left his hut, the sun was only a hand's breadth above the eastern horizon. Instead of following the path that led directly to the great ceremonial centre, he took another trail that would take him to the north side of the city. Ten minutes' brisk walk brought him to a clearing in the wood where many men were at work. Here were the lime-kilns.

On the far side of the clearing a new kiln had been started. In the centre a pole, about nine feet high, had been set up, and, on the ground around it, large logs of hardwood had been laid at intervals like the spokes of a great wheel with a diameter of about twenty feet. Ah Haleb inspected this arrangement to assure himself that the spaces between the radiating logs had been filled

adequately with smaller timbers, and the crevices packed with slender branches and chips, all of freshly cut hardwood. Close by, a stream of men brought wood to raise the levels of other kilns to the requisite height of six or seven feet by adding more layers with their tightly chinked radial spokes.

The foreman approached Ah Haleb with a suggestion that the completed kilns be fired, as the day was windless and looked as if it would remain so. There were several of these kilns awaiting firing. On top of the completed drums had been added a layer of limestone chunks, none bigger than a baseball. This layer was about two feet deep at the perimeter, but sloped up to a height of three feet at the centre. The whole mass looked for all the world like a giant birthday cake with a generous conical layer of frosting on top, and with the summit of the central pole serving as a solitary candle.

Ah Haleb, aware that the foreman was a better judge of weather conditions than he, authorized the firing. Men ran forward to remove the central pole from each kiln and drop glowing embers in the resulting well. In a few minutes dense clouds of smoke began to billow upward, as the fire, fanned by air sucked through interstices in the layers, began to eat its way outward from the central well. Later the smoke would yield to sheets of flame, the drum of wood would collapse inward, shooting its roof of limestone chunks into the centre of the inferno. Not until the following morning would the fire burn itself out.

The architect inspected kilns which had been fired a week or two before. The lime, slaked by dews and rains, had swollen to a powdery mass several times its original bulk. Satisfied with their condition, he directed his steps to the great court of Chichen Itza. Passing between the tall pyramid of Kukulcan and the sacred cenote, he came to the Temple of the Warriors and its great colonnade, the building of which had engaged his attention for the past year (Plate 6c).

The strictly architectural work of erecting the pyramid and the temple above was completed. Outwardly the building was finished; there only remained the minor matter of applying a coat of stucco to the exterior surfaces. Inside the temple sculptors and painters were at their tasks. Both groups of artists worked independently and with considerable latitude within the broad limits fixed by Ah Haleb on the instructions of the high priest. The architect derived much satisfaction from watching the slow em-

bellishment of his creation, but that was a pleasure which could await his leisure; the work on the colonnade needed his close attention.

There the task of erecting the corbelled vault was going forward. The four lines of columns, with their square drums not yet sculptured, and the solid end-walls of the colonnade had been completed several months previously (cf. Plate 8c). The great squared beams of sapodilla wood, some ten feet long and one foot thick, had been slung into position to span the intervals between the columns, and now formed four parallel lines the length of the colonnade, like the double tracks of a twentieth-century elevated railway. To counteract any lateral thrust during the erection of the vaults above them, which might cause buckling and collapse, Ah Haleb had had a line of logs placed on the floor on each side of each row of columns. Against them were wedged at short intervals transverse braces which extended diagonally to the beams of the parallel lines of columns. Looking down the long axis of the colonnade, these pairs of braces formed a series of huge X's one behind the other. As soon as the vaults of stone and cement were completed and had hardened into a monolithic mass, the braces would be removed, and the sculptors would be set to work carving the faces of the columns.

Above the beams the vaults had risen to a height of a couple of feet. This was the most ticklish work of all. In recent months Ah Haleb had more than once awakened from a nightmare in which the columns had buckled under a badly balanced weight, and the whole colonnade had come toppling to the ground. Had he known what playing-cards are, he would have compared himself to a man building a house of cards, but with the comforting knowledge that, once the building was finished, its strength would grow day by day with the hardening of the mortar.

The erection of the vaulting was slow work to be entrusted only to his most skilled masons. The walls of the vaults were being built a course at a time, with long intervals between work to let the mortar harden. A new course was being added today, and the masons were busy laying the specially cut stones used in the vaulting. These were shaped like knee-boots, with the leg part tapering to a point and the sole, which was to form the surface of the vault, carefully dressed. Each vault stone was laid in a bed of the finest mortar and tilted to the requisite angle, so that its lower front edge nested on the top front edge of the stone below it. As

soon as one stone was laid, the other wing of the V, which was to form the soffit of the parallel vault, was laid, and the space between the tails of the two stones filled with a mass of rock and mortar, and levelled flush with the tops of the newly laid stones.

Satisfied that the work was going forward evenly, Ah Haleb ducked through the lines of X's of the bracers and under the occasional ladders, up which the masons' assistants carried their pails of mortar, and so left the colonnade. His next stop was at the place where the mortar was being mixed. Two large piles marked the spot, one of lime, the other of *sascab*, a white marl, which was mixed with the lime as we use sand. Most of the mixers could be trusted, but Ah Haleb had to watch for carelessness. Too weak a mixture used in any one part of the vault might lead to the collapse of the whole structure. For this work a mixture of one part of lime to one and a half parts of *sascab* was being used, double the strength of the mixture used in the fill of pyramids or other places where the stress would be much less. The architect stopped to watch one of the mixers stir the mass with a wooden paddle, sampled the resulting mixture by rubbing a little between his fingers, and, enjoining the mixer not to weaken the proportions, passed on.

Re-entering the colonnade, he made his way up the stairway of the pyramid. He glanced, as he had done every day for the past four months, at the friezes of sculptured warriors of the military orders of jaguars and eagles strung along each terrace of the pyramid (Fig. 10c, page 121). As always, his eyes were attracted by one carved stone set upside down, marring the whole appearance of the frieze. He frowned. He had been ill at the time that carelessness had occurred. As soon as he had got back on the job and had seen that stone sticking out like a sore thumb, he had wished to have it turned right-side up, but the high priest, who was with him at the time, had ordered it to be left as it was, saying that perfection was for the gods alone, and in any case the back wall of the colonnade vaulting would eventually hide it. That was true, but Ah Haleb felt this sloppiness almost as a personal affront. The mason who had blundered had been ordered to make a penitential offering of blood drawn from his own body, and had been demoted to the rank of a helper; at that, in Ah Haleb's opinion, the fellow had been lucky to have got off so cheaply.

Entering the temple, the architect paused to accustom his eyes to the dim light. The artists responsible for the murals were not

at work, for the light was bad; they would work in the afternoon when the western sun streamed through the triple entrance to the temple. Considerable progress had been made with the painting of the great mural; the bold preliminary outlining in a tawny red had been completed several days before and had given Ah Haleb a good idea of how the scenes would appear. Now some of the second outlining in black was finished and filled with the requisite colours. In one place a scene representing an attack across water was taking form, and the light blue of the water and the greens of some of the trees had already been filled in (Plate 17*a*); at another place a large feathered serpent was coming to life, but looking strangely naked without his coat of plumes, as yet unpainted.

Near the entrance, where the light was best, sculptors were at work on the sides of several columns. Here the design to be carved in low relief had been outlined with charcoal on the dressed stone surface. The task of pecking away the background with coarse hammerstones was proceeding smoothly, and, in some instances, the incising of the main details had already begun. This was being done with sharp stone flakes which, with alternating strokes on each side of the shallow line, were producing V-shaped grooves. The chinked layers between the drums of the columns had been covered with stucco, over which the charcoal outlines swept to indicate the areas where the outline would have to be carved in the stucco.

One of the charcoal outlines represented a warrior dressed in the garb of the Mexican god Tezcatlipoca, a sight which did not please the architect, who was still a Maya rebel despite the fact that the Mexicanized Itza had long been masters of the city. There was, however, nothing that he could do about it. At the far end of the temple some of the little Atlantean figures which would support the flat top of the altar were being assembled, and Ah Haleb noticed that they were not all of the same height. He wondered what to do about that, and then decided it would be best to sink the tallest in the floor. Their feet would not show, but at least the tops of their heads would be even, making a level support for the flat top. It was extremely dark at that end of the temple except just before sunset, and few people would ever know of this indignity to the figures of the gods. Ah Haleb can hardly be blamed for not foreseeing that some 800 years later archæologists of Carnegie Institution of Washington would detect his little subterfuge.

Leaving the temple, the architect passed to a quarry not far off

the edge of the great court. There some sculptors were at work on elements which would be assembled to form the decoration of the entablature of the front of the colonnade. Previously some of this work had been rather carelessly executed; intervals had not been properly measured, with the result that carved lines on adjacent stones sometimes did not meet. Ah Haleb was determined this should not happen again. It was customary to carve the designs on columns after they had been erected, but stones for friezes and the mosaic decoration of façades were sculptured at the quarry. There was no logical reason for this custom that he could see.

Lines of dressed stone were arranged by sizes. To one side was a row of veneer stone for the plain areas of the façade. Behind were enough boot-shaped stones to complete the vaulting of the colonnade, and beyond was a line of the specialized capstones which would be used to close the vaults. The architect wished that these were already in position. In the weeks to come he was going to have little peace of mind, for with each new course added to the vaulting the danger from side-thrusting would grow.

From the quarry he walked to the other end of the city where work had recently started on a small pyramid. The side had been roughly levelled, and the space to be occupied by the pyramid had been laid out. Inside this area a second rectangle had been marked on the ground, corresponding to the area of the pyramidal core. Not until it was erected would the outer skin of the pyramid be built. Lines of workers were bringing loads of stone to the scene of operations.

Masons and their assistants were busy erecting the core. This work was not done all at a time. Instead, the area had been divided into rectangles, each about six by four feet, and each was built to a height of about six feet before the next unit was started. Already the rectangular blocks at each corner were well advanced. The masons had laid the undressed stone and mortar to form the four walls of each block, a course at a time, and, after levelling them off, had filled the area enclosed within each rectangle with rocks and weak mortar. This was work that needed close watching, for masons, in a hurry to finish their tasks, often filled the centres of each block with large rocks placed so that there would be as much space between them as possible, and then used a minimum of mortar, blocking the cracks with stones so that the mortar would not fill them. Such sloppy work, if undetected, might

cause serious settling after the pyramid had been completed and the temple erected on its summit. By that time it would be too late to remedy the defect. The architect had placed one of his keenest foremen in charge here, and therefore was confident that there would be no unsubstantial building this time.

The lime-kilns for this construction and the *sascab* pits must be visited. After that Al Haleb would be free to go home to work on the drawings for the temple that would eventually crown this new pyramid. He had promised to have them ready for inspection by the high priest within a few days.

On his way home the architect stopped at a small shrine to make his daily offering of copal to the creation gods. People generally paid little attention to those gods, who lived far away in the thirteenth heaven, but Ah Haleb felt that he was in a sense under their protection, for in his own way was not he, too, a creator?

MARRIAGE À LA MODE

Young Ah Pitz Nic was bored and restless, and, looking around at his fellow inmates in the men's house, he realized why. One by one, friends of his own age had left to get married, and now those in the men's club were mostly boys of sixteen to nineteen years old, on whose juvenility he looked with that feeling of mature superiority attained after twenty birthdays. If all went well, he would not have to stay much longer in the men's house, for the preliminaries to his marriage had been negotiated, and "negotiated" was the right word in more senses than one.

Nic had first noticed Ix Bacal as he and his friends from the men's house went down to bathe one day in the cenote. Coming round a bend in the trail through the woods, they had caught her and her companions by surprise, and Nic had had a good look at her before the girls could turn their backs on him in the Maya way, for with a large pottery jar of water on your head you can't turn your head quickly. It was extraordinary how often in the next week or so Nic happened to be passing that bend at the time the water-carriers were coming back from the cenote. Not long after that, Nic shot a deer, and on the way back detoured to pass by the hut in which the girl lived, for he knew her name and where she lived. Some of his friends chaffed him about that detour. In the stories of the sun's wooing of the moon, the young sun god had stuffed a deerskin with ashes and carried it past moon's

hut day after day to impress her with his ability to keep the larder full, until one day he slipped before her house; the deerskin scattered its load of ash broadcast, to sun's considerable humiliation. Now the fellows wanted to know if Nic's deer was real or stuffed, and one of them solemnly presented him with a stuffed skunk skin as he was leaving on his next hunting trip.

Nic had talked the matter over with his father while his mother pretended to be busy with her weaving, although taking care not to miss one word of the conversation. Nic's father would be sorry to lose his son's help in weeding and harvesting his cornfield and for bringing home loads of wood, but since his eldest daughter's husband had recently come to work for him, young Nic's marriage would not really represent a loss of labour. The elder Nic promised to get a marriage broker to sound out the Bacal parents.

He had been as good as his word, for he had engaged the offices of the marriage broker and had arranged that he and his wife would accompany Nic to the Bacals' hut to make an offer of marriage in the near future. Unofficial word had been sent to Ix Bacal's parents of the proposed visit, which would be on the day 1 Caban, the day of the moon goddess, in whose charge were such matters as marriage and parenthood. Nic and Ix Bacal had not exchanged a word, but the boy had felt reassured that so far as she was concerned, there would be no trouble, for passing by Ix Bacal's hut a few days after word had been passed to the Bacal family of the proposed visit, he had found her brocading a design of corncobs and flowers on the cloth on her loom. As *nic* means little flower and *bacal* is corncob, Nic felt quite sure that this was a message of encouragement to him. The trouble was that her views on the choice of her future husband were not of much consequence; that was a matter the older generation decided in consultation with the priest.

The visit of the marriage broker and Nic's parents to the Bacal hut had gone well. As was usual on such occasions, nothing about a proposal of marriage was so much as mentioned in the course of the first hour of conversation. Much attention was paid to the condition of the corn crop, the chances of damp weather producing a lot of rust damage to the ears, the best ways of warding off locust invasions, and the failure of the series of sacrifices the previous year to end the drought naturally to be expected in a year which began with the malignant day Cauac.

The arrival of gourds of cocoa mixed with corn and sprinkled

with chile pepper gave a new turn to the conversation, for in Yucatan little cacao was grown and the expensive drink was seldom served by families, such as that of Ix Bacal, which were not of the aristocracy. It was a sign that the suit was not unsatisfactory to the Bacal family; it could also be a sign that the Bacal family thought themselves a bit superior, and the bridal price would be high. The matchmaker had the answer ready for that line of reasoning.

Finally, when every other subject had been thoroughly discussed, the matchmaker brought forward the proposal that the two families should be united by the marriage of young Nic to the Bacals' daughter. The good nature and the skill of the young man as a farmer and hunter were set forth at length and with the exaggeration of a man selling a gem.

Ah Bacal (*Ab* is the masculine prefix, as *Ix* is the feminine) expressed his complete surprise at any suggestion of marriage for his daughter, although, of course, as he pointed out, he had realized that with her skill in weaving, which was almost beyond belief, and her amazing ability to cook, she must necessarily attract every young man in the neighbourhood. In addition, he continued, one could see from her build that she would bear many children, and in looks she could stand comparison with even the young moon goddess herself. In the family, he concluded, she was affectionately known as Ix Kukum, "Lady Quetzal Feather", because she was so precious.

The matchmaker replied with a fuller catalogue of Nic's virtues, and then, after some general discussion of the merits of both young people, he came to the point. Young Nic was so much above the average that his parents thought that there was no call to make the customary present, but in order to keep to custom, they would engage that the boy should serve his future father-in-law for three years after marriage, help him with all the agricultural work, hunt with him, look after his bees, and help to keep the household supplied with firewood. In addition, he would make a payment of a quarter of a load of cacao beans, eight red beads made of the valuable spondylus shell, thirteen corn-husk packets of copal, and two loads of unspun cotton.

Ah Bacal declared the payment ridiculous. His daughter was called in and asked if she was willing to marry Nic, provided the payment could be arranged; and to that question, with every attempt not to show her interest, she replied affirmatively. Ah Bacal

then proposed five years' service and a doubling of the cacao and cotton payments. This proposal was promptly but politely turned down by the matchmaker, who pointed out that Ah Bacal had no sons to help him in his work and was not as strong as he had been, and therefore should be extremely glad to get such a hard-working son-in-law. That was really the matchmaker's trump card, for young Nic had a good name as a hard worker; he had wisely held it back to trump Ah Bacal's counter proposal. The bargaining continued for a long time, but finally it was agreed that service for four years and the payments as first proposed might be the basis for an agreement. On a subsequent visit presents of decorated gourds and pottery were exchanged to seal the bargain, which was celebrated with a meal brought by the visitors. Later, Nic's father walked over to the men's hut to give his son the news and to hand over a gaily brocaded loincloth, a gift from his future in-laws.

Even then the matter was not really settled, for the local priest had to be consulted. Next day, the matchmaker, with a load of corn as fee, interviewed the priest, who pronounced that there was no serious conflict between the gods on whose days the young people had been born. Indeed, the mating would be extremely favourable, since Nic's natal day was 3 Kan, and Kan was the day of the maize god, and three the number of the rain and lightning god, who helps the crops to grow. What auguries could be better for marriage to a girl whose name was corncob? Her birthday, 7 Etz'nab, was ruled by the jaguar god and the god of sacrifice, both of whom might be regarded as neutral so far as this marriage was concerned. Finally the priest suggested several days favourable for the marriage.

Some time passed before there came a slack season, during which the parents could be sure of getting together a group of kinsmen and friends to build a new hut behind that of the Bacals for the couple, but the actual building of the hut took only two days. Early in the morning of the first day all the men went out to the woods, some to get the four corner posts and the wood for the beams that rest on them, the ridge pole, and the A frames which support it; others to get the lighter rafters and the roof rods. The four forked corner posts were first placed in position, and in their forks were laid the longitudinal beams. Meanwhile, two of the helpers had returned from the woods with coiled lengths of suitable liana, with outer covering removed, and strips of bark.

With these the beams were lashed to the corner posts, the *A* frames to the beams, and the ridge pole to the *A* frames (Fig. 18*d*, page 233). As the work of lashing these together and then lashing, one by one, the rafters and the roof rods into position progressed in the capable hands of four of the most experienced men, the rest returned to the forest for more liana and for loads of the fan-shaped leaves of the *guano* palm.

By late afternoon when work stopped, the frame of the house was finished, and large piles of palm leaves with stems chopped short were ready for the men to start thatching next morning. The walls had not been started, for in a Maya house, unlike ours, the roof is not supported by the walls, but by the four corner posts and the two longitudinal beams (Fig. 18*a*, page 233).

Meanwhile in the Bacals' hut there had been much activity. Scores of venison and turkey tamales had been made, pots of beans were boiling, sweet potatoes were cooking slowly in a covered pit in the ground, and thick tortillas of maize and ground squash seed were being kept hot in large covered gourds. As soon as work stopped, the men and boys returned to their huts to wash and change their loincloths, and then returned to the Bacal's hut for the customary feast.

Next morning the thatching was started, and more poles were set up and lashed with liana to form the walls and the doorway. This was a simple task uncomplicated by such problems as windows, just as the thatchers had not needed to worry about a chimney. Early in the afternoon the hut was completed, long before the festival meal was ready for the workers. It was a cheap way of obtaining a home; every item in its construction had come from the woods around, and the labour had been obtained at the cost of two meals and an obligation to repay it by volunteering for similar projects undertaken by one's helpers, a not unpleasant way of working together for mutual advantage. The work had not been hard, and there had been some fun. Nic and a friend who, like all Maya, loved a practical joke, had untied some of the liana lashings which held one of the roof rods where Uc was thatching, taking advantage of that fat youth's short absence to get a drink of *posol*. When Uc, returning to his job, stepped on that roof rod, it bent under his weight, throwing him off balance, so that he disappeared through the roof frame and hung there suspended between roof and floor. Everyone was laughing too hard to rescue him as he dangled there like a trussed-up tapir, calling for help.

Then two of the men had placed a notched pole within Uc's reach, but it had slipped, landing Uc and all his excess pounds on top of his two would-be rescuers. That was something that Uc would not be allowed to forget for a long time.

Next evening the hut was consecrated by the local priest. Copal was burned in the four corners, and *balche*, turkey meat, and tortillas were offered in sacrifice. Nic with the help of his father-in-law had constructed a bed of poles with pole slats tied with liana across the top, as well as various odds and ends such as shelves and suspended trays of the same material. The fireplace—three stones forming a triangle—had been the easiest job, but the table for Ix Bacal's metate had to be made with more care of solid wood, for the backward and forward sweep of the muller on the metate would cause any table not strongly made to collapse in very quick order. Furniture, such as pottery storage jars and cooking vessels, gourds, pottery griddle, baskets, a bark cover and a reed mat for the bed, and a bark bucket, had been provided; all was ready for the couple to move in.

The evening before the wedding ceremony Nic was subject to a lot of chaff in the men's house. Several Kekchi traders from the Alta Verapaz, in the distant highlands of Guatemala, had arrived that day, bringing obsidian cores to trade for the famed textiles of Yucatan, and were lodged in the men's house. They joined in the conversation as they sat round the fire pressing blades one by one off the cores to have them ready for the next day's market—it looked so simple, but the Yucatec Maya could no more do it than the Kekchi could do the same with a flint core. One of them was teasing young Nic, telling him that he ought to go to the Guatemala highlands to seek a wife. "In my land," he said, "the girl has to go to the man's home before the marriage and give a demonstration of grinding maize and making tortillas. You ought to do that up here. Another thing, if the girl is found to have been free with her favours before marriage, you can send her home, and get back your payment. Down by Lake Atitlan a fellow shows he is interested in a girl by breaking the pottery jar she is balancing on her head as she goes down to the lake to fill it. If she likes him, she says nothing; if she protests, that means she isn't interested, and the fellow has to buy her a new jar. That is a delightful custom, and the pottery makers are all for it."

This last remark was not taken too seriously by the young fellows in the men's house, for travellers from far away have a habit

of telling tall stories, but the trader assured them it was true. "The lad waits on the path, and you should hear the excited chatter when a jar is smashed, although the blow is a gentle one. You fellows," he continued, "who complain about the high cost of a bride ought to go to Campeche, for there a bride costs only a bow and two arrows, and you can leave her any time during the first year after marriage."

Next morning Nic's mother presented to Ix Bacal the wedding skirt and brocaded blouse she had woven for her, and laid out for her son a new loincloth with the ends decorated with parrot



feathers and a shoulder mantle she had made for him. Nic's father had made him a pair of sandals and a necklace of beetle wings, and his uncle brought him a surprise gift of a charming pair of ear ornaments of hardwood with a carved design of flowers inlaid with red and yellow pigment.

The ceremony itself was held that evening in the Bacal house following a feast and the ceremonial drinking of *balche*. Speeches were made by the fathers of the bride and groom, and the bride's uncle added an unscheduled address somewhat marred by the cumulative effects of the nips of *balche* to which he had been helping himself with unbecoming alacrity. At the conclusion of the ceremony the party adjourned to the newly built house in which the priest again burnt copal. The bridal pair, who still had never

spoken to each other, were ceremoniously seated on a mat, where they were blessed by the priest after prayers to sundry gods for their well-being had been said.

An hour before sunrise next morning Ix Bacal was busy preparing tortillas. Nic arose and ate his breakfast, waited on by his wife. A few minutes later he was following his father-in-law along the trail which led to the latter's cornfield to work the first day of his four-year contract; honeymoons are not a part of the Maya way of life.

DEATH AND LIFE

In a thatched house in the northern highlands of what is now Guatemala an old man was dying. Outside, in distant fields, men were about their daily work with a feeling of urgency, for the sun was nearly two "months", that is, forty days, past the spring equinox, and life-giving rains would soon end the dry season and cause the corn seed to quicken. Outside the hut, but close by, women also were working with a feeling of urgency, but they were racing not life, but death. They were weaving the last rich mantles for the old man's burial, and they were weaving for the last time, for they, too, were about to die.

Inside the hut a middle-aged man watched his father, the head chief, and wondered when death would come. The sorcerers had made their divinations, pouring heaps of *pito* beans or corn on the ground and counting them into piles of four, and had followed them with ceremonies on neighbouring mountain-tops. A visiting sorcerer from the territory of the Mam in the western highlands had made his divination in the strange method of the Mam—rubbing his legs and watching for the twitching of the muscles. His left leg had twitched, a sign of bad news. All the divinations had pointed to a verdict of death within a few days; the only difference was the exact day. The old chief had heard the results and had made up his mind to die with that acceptance of the inevitable which is so alien to us, but so common in the Orient and among American Indians. The old chief's favourite diviner had said that that day, 10 Camel, would see the end. It was the day of the death god, a fact which may have influenced the result of the divination; it certainly affected the old chief's will to live. He had decided that he would die that day, and when an old Indian, be he Maya or Aztec or Iroquois, makes up his mind to die at a certain time, he usually does so.

The old chief lived through the night, but when the chill dawn came, he breathed his last. His waiting son placed a jade bead in the dying man's mouth to receive the departing spirit, and then rubbed it gently over his father's face. The event had been anticipated, and all was prepared: the embroidered mantles to cover the dead man's shoulders were woven; men to summon chiefs of neighbouring groups were standing by, waiting for orders to run with their messages; the household goods to be placed in the burial shaft had been assembled; the food for the old chief's last journey to the underworld was ready; and the tomb itself was dug. A watchful eye was being kept on the slaves to see that none tried to run away.

All through the next day the neighbouring chiefs, each in his litter carried by slaves and followed by a retinue of head-men, arrived at intervals; their housing and entertainment presented problems which tested the organizing abilities of the new head chief.

Burial was on the third day. A procession of local chiefs and head-men and the chiefs who had come from near and far for the funeral, together with numerous attendants bearing gifts and household possessions, climbed the hill to the burial shaft, accompanying the dead chief. A forlorn group of frightened slaves also marched on their last journey, for they were to die so that their souls could minister in the next world to their master's soul.

The dead chief had been decked with jewels—jades, shell necklaces, and a few ornaments of gold and gold-copper alloy (four or five centuries earlier these would have been unknown, for metal did not reach the Maya until the end of the Classic Period). He wore on his breast a large mirror of iron pyrites, the polygonal plates of which were fitted mosaic fashion on a back of painted slate; in the lobes of his ears were earplugs of apple-green jade; leg-bands from which hung little copper bells, so that they had jingled at each step he had taken in life, were tied beneath each knee; and sandals with high heel-guards of worked leather were on his feet. A cotton loincloth with an elaborately embroidered design was wrapped around his waist, the ends, decorated with feathers, hanging down in front and behind. Over his shoulders had been laid mantle after mantle of cotton brocaded with intricate designs and shoulder cloaks of gorgeous featherwork, the "trousseau" which his women slaves had been making for many months for this new life in the next world.

Thus adorned and squatting on his haunches, the dead chief had been placed in a large wooden box—coffin one could scarcely

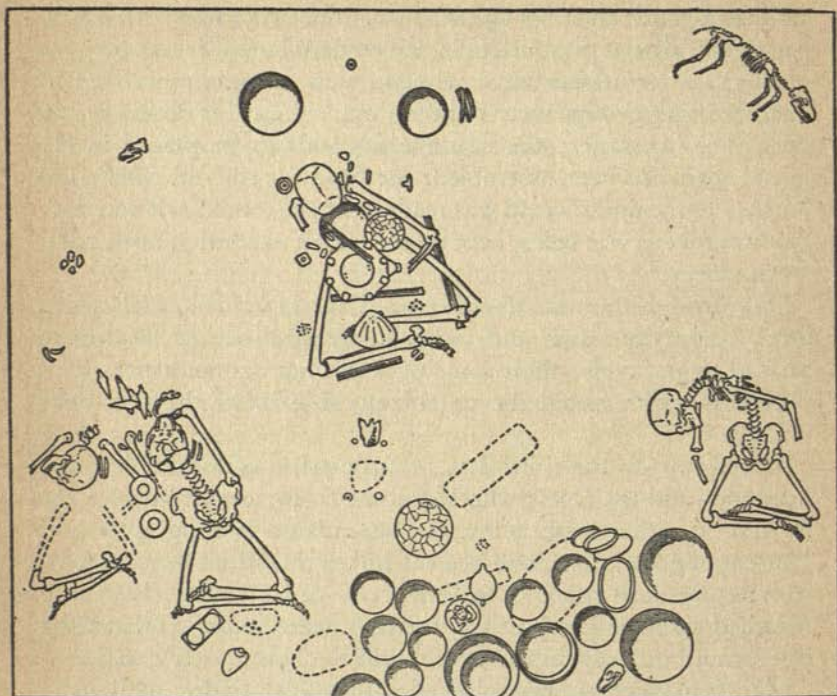


FIG. 17a.—Tomb of an Important Chief beneath Part of a Pyramid at Kaminaljuyu.

The pit, dated about A.D. 550, originally had a roof of perishable materials. The chief and his attendants (or family?) were seated cross-legged, but with decay the bodies slumped. The attendants, perhaps slaves sacrificed to accompany their master in the next world, were two adolescents of fifteen to seventeen years and a child of about eleven. In the tomb were many jade beads, jade earplugs, shell beads and ornaments, iron pyrite mirrors, obsidian points, an alabaster vase, many fine pottery vessels, the skeleton of a dog (to lead his master to the abode of the dead), jaws of a jaguar, the skull of a coyote, and (not shown in the illustration) a corn grinding stone and muller, and traces of a sort of wooden litter. Some four hundred shell tinklers which formed a rectangle around this litter had probably been attached to a textile over the litter. (*After A. V. Kidder*)

call it because it was almost cube-shaped. The box rested on a litter borne on the shoulders of four slaves.

At the top of the mountain the procession halted, and the box was lowered into the wide, deep pit already prepared. Attendants advanced in turn to deposit the rest of the dead man's possessions:

more jades; iron pyrite mirrors; vessels of pottery, Mexican onyx, wood, and gourd; featherwork of quetzal, macaw, parrot, and ocellated turkey plumage; knives and points of obsidian; flint-pointed spears; shields; dishes of corn, meat, beans, and chile sauce; cups of *posol* and spiced cacao; sleeping mats and cotton cloaks; and presents brought by neighbouring chiefs. Next, the dead chief's favourite dog was killed and placed in the pit, for his

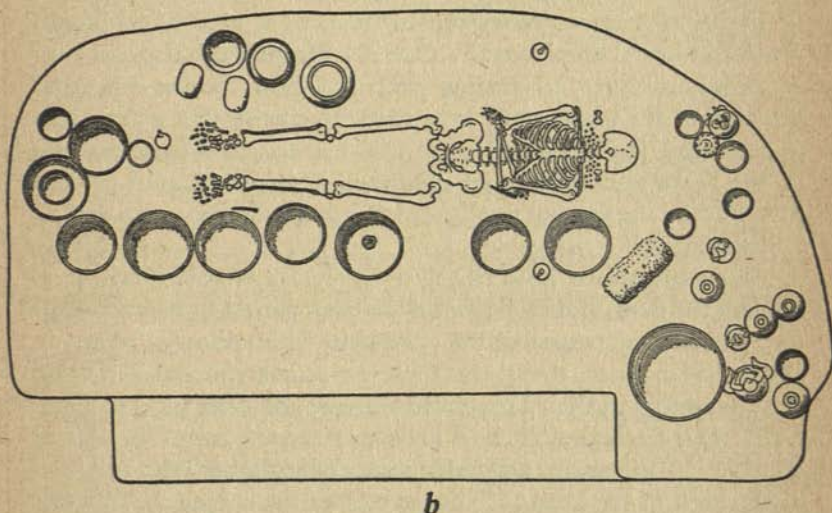


FIG. 17*b*.—Burial of a Priest at Uaxactun, about A.D. 550.

A man placed full length, with red ochre on his bones. There were no teeth or facial bones. Thirty-five pottery vessels of the early Classic Period, earplugs and beads of both jade and shell, jaguar teeth, a sting-ray spine, traces of copal, charcoal, and a bone tube were with the burial. The sting-ray spine perhaps indicates that the dead man was a priest, since it was used by priests in blood-drawing ceremonies. (After A. L. Smith.)

shade would guide his master's shade on the long journey to the other world (Fig. 17*a*, page 224).

Then it was the turn of the slaves, both those of the household and those who had been brought by visiting chiefs. One by one they were slain and laid in the pit, and with them were placed their tools. Corn-grinding stones, looms, spindles and spindle whorls, brooms, and potter's clay and temper were laid with the women slaves; stone axes, planting sticks, blowguns, spears, knives for dressing skin, and pack traps with the men. The pit was now almost full; earth was thrown in to fill the spaces between bodies

and utensils, and tamped down. Shortly a masonry altar would be built over the pit, and on it incense would be burned to the gods and food deposited so that the departed spirits could feed on the spirit within it. How often and how widely in time and place have such funerary rites been performed so that the shades of departed kings and chiefs could live in the next world as they had lived in this!

That evening the new head chief entertained his father's mourners with a banquet. After polite speeches had extolled the virtues of the dead man, conversation became more general, although death and burial dominated it. One chief from the Chiapas side of the Cuchumatanes Mountains explained how similar were the burial rites near his home, save that the corpse was placed in a huge pottery jar. An elderly man who had travelled from one end of the Maya area to another described a peculiar burial custom practiced by the Cocom family which ruled at Mayapan, in distant Yucatan.

"They cut off the head of the dead chief," he said, "boil it to remove the flesh, and then saw off the back part. On the front half they model the features of the dead man with a kind of bitumen, and, what is more, they keep these permanent portraits of their dead ancestors in their household shrines, and offer food to them on all their festivals. There is another strange custom in parts of Yucatan. A son orders a wooden statue of his father with a hollow in the back of the head. He burns part of the corpse and fills the hollow with the ashes, and then covers the mouth of this hollow with the corresponding piece of skin from the back of the dead man's head, and buries the rest of the body. Families keep these wooden statues with the statues of their gods, and venerate them. It is certainly a strange custom."

The speaker could not see the sceptical expressions on the faces of some of his listeners who sat in shadow beyond the light from pine torches. Modelling features of the dead man on his skull did not strike them as unusual, for they knew a somewhat similar custom had once obtained in their own country, but the account of the sealing of the hole in the wooden statue with a piece of skin from the back of the dead person's head sounded like a traveller's tall story. They need not have been sceptical. A century or so later, Bishop Landa reported both customs; and a wooden statue with a hole in the back of its head, dredged from the well of sacrifice at Chichen Itza, is now in the Peabody Museum, Harvard University.

Normally, the visiting chiefs would have started home the next morning, but the new head chief had asked them to stay to take part in the *betx' mek* ceremony for his daughter who would be three (twenty-day) months old that day. The *betx' mek* is carried out when a girl is three "months" old because three is woman's sacred number (the fireplace at which a woman will spend much of her life has three stones arranged as a triangle); it is performed when a boy is four "months" old because four is man's sacred number (to represent the four sides of the cornfield in which a man will labour all his days).

The girl was brought into the room in her mother's arms and handed to the wife of one of the chiefs. On a mat in the centre of the room were placed nine objects which a woman would use in her daily work. They included a spindle and a hank of cotton, a miniature loom and batten, a bone needle, a tiny water jar, a cooking pot, a miniature grinding stone and muller for grinding corn, and a cullander. The woman picked up the spindle and hank of cotton, and placing it in the child's hands, said, "Take it so that you will learn to spin cotton," and at the same time guided the child's hands in a rough imitation of twirling the spindle. Next, after carrying the child on her hip once around the mat, she picked up the miniature loom and helped the child to go through the motions of weaving, and so on until nine circuits of the mat had been made and the child had been instructed in the use of all the implements. The ceremony was then repeated with the husband of the "godmother" as instructor. At its conclusion everyone felt sure that the girl would later be an asset to the group, although, truth to tell, as the daughter of a head chief, she would not be called on to grind maize or sweep floors.

Next day, in a tropical downpour, the visitors left for their homes. A chief and half a score of slaves had ceased to belong to the group; a new member had been received into it. Except for the family of the departed head chief, the interlude was over; the heavens had opened, the precious jade, the life-giving rains, had come, and with them nature had been revived; death no longer intruded on the community.

IV. Maya Religion

To feel the pulses of hearts that are now dead.—Thomas E. Brown.



COSMOLOGY

OUR SOURCES for Maya religion are the writings of the Spaniards, largely friars, of the sixteenth century, religious references in the Maya Books of Chilam Balam, the residue of paganism recovered by ethnologists working among present-day Maya after sifting out all European accretions and new ideas developed from that blending, and, lastly, religious representations sculptured on ancient monuments or painted on murals or in the three surviving books of hieroglyphic writings.

The material is not too promising. For one thing, all sources except the last are subsequent to the big intrusion of Mexican ideas into the Maya area about A.D. 1000, and it is hard to tell how many of the religious beliefs and practices about which they speak are truly Maya. Although most of the religious ideas introduced from central Mexico appear to have been followed only by the new ruling caste which arose as a result of those invasions, it is possible that some of them may have been accepted by the Maya masses, perhaps in altered form. Furthermore, it is almost impossible to disentangle these Mexican threads from the Maya ones because of the strong similarity in the fundamental religious beliefs of all Middle American peoples.

In interpreting religious sculpture of the Classic Period in the light of what we know of practices at the time of the Spanish Conquest, particularly in Yucatan, we have to make the somewhat dangerous assumption that Maya religion was static and that the same gods were worshipped and the same rituals followed in, say, eighth-century Copan as in sixteenth-century Yucatan. So far as the

general cosmological structure is concerned, I think that may well be the case; but there were differences, local and probably temporal as well. For instance, in the highlands of Guatemala, mountains were personified and identified with deities of the earth. This cult of mountain gods was of great importance in that rugged land, but it never took hold in the flat country of northern Yucatan.

The cosmological ideas of the Maya were involved. They appear to have believed that the sky was divided into thirteen compartments, in each of which certain gods resided. These may have been thought to be arranged as that number of horizontal layers one above the other, or as steps, six ascending on the east and six descending on the west, with the seventh at the top so that compartments one and thirteen, two and twelve, and so on were on the same level. The sky was sustained by four gods, the Bacabs (Fig. 104, page 121), who stood at the four sides of the world. An association of supreme importance in Maya religion is that of colours with directions. Red is the colour of the east, white of the north, black of the west, and yellow of the south; there may have been a fifth colour, green, for the centre. Almost every element in Maya religion and not a few parts of the Maya calendar are connected with one world direction and its corresponding colour. Thus the red Bacab stood at the east, the white Bacab at the north, the black Bacab at the west, and the yellow Bacab at the south.

At each of the four sides of the world (or perhaps at each side of one of the heavens) stood a sacred ceiba (the wild cotton tree), known as the Imix ceiba, and these trees, too, were associated with the world colours. They appear to have been the trees of abundance, from which food for mankind first came; their counterparts in Aztec mythology helped to sustain the heavens. In a ritual of the four world directions in the Book of Chilam Balam of Chumayel, we read: "The red flint is the stone of the red Muzencab [the sky bearer who also functioned as a bee god]. The red ceiba of the dragon monster is his arbour which is set in the east. The red bullet tree is their tree. The red sapodilla, the red vine. . . . Reddish are their yellow turkeys. Red toasted corn is their maize."

The rotation of the directions follows this quotation, each with associated deities, flora, and fauna of the required colour. On each tree perched a bird of the requisite colour. There is reason to believe that a fifth green tree was set in the centre. Highly conventionalized representations of world-direction trees

with birds perched on them appear on reliefs at Palenque and Piedras Negras. Of the ceiba tree, still considered sacred, many legends and superstitions survive, although the old cosmological beliefs have largely disappeared under the impact of Christianity. It is almost certain that the Maya, like the Mexicans, believed that the world rested on the back of a huge alligator or crocodile, which, in turn, floated in a vast pond. I am inclined to think that there may have been four of these terrestrial monsters, each assigned to a world direction and each with its distinguishing features.

There seems no reason to doubt that the Maya, like the Aztec, believed that there were nine underworlds, one below the other or again stepped, with the fifth the bottom-most. At any rate, the nine lords of the nights, who have an evil aspect, are as prominent in the Maya calendar as in the Aztec. In Aztec belief these lords ruled the nine underworlds; Mictlantecutli, one of the nine lords and chief god of the underworld, and his wife ruled the fifth. The numbers thirteen, nine, seven, and four have great ritualistic and divinatory importance in both Maya and Aztec cultures.

The Aztec believed that the world had been created five times and had been destroyed four times, the present age being the fifth. Each age had been brought to a violent end, the agents being respectively ferocious jaguars, a hurricane, volcanic eruptions, and a flood. The traditions that have survived among the Maya on the number of creations and destructions of the world are somewhat at variance. That we are now in the fourth age is the view expressed in two sources. Nevertheless, it is probable that Maya belief was in agreement with the Aztec in assigning the number five to the present age.

We have no information on the spans of time the Maya assigned to these ages. Actually, as the Maya priests reckoned hundreds of millions of years into the past, it is probable that they grasped the concept of time, and therefore perhaps a world, without beginning. This intellectual conception of a few priest-astronomers may have existed alongside a popular belief in various creations and destruction of the world.

THE GODS

Most Maya gods were in groups of four, each associated with its world direction and colour. The gods in each group could be re-

garded either as individuals or collectively as a single deity, somewhat as in the Christian doctrine of the Trinity.

Gods could have both good and bad aspects. The Chacs sent the rain, but they also sent hail and long periods of damp which produced rust on the ears of corn. The Chac might therefore be shown as a beneficent deity or as a death-dealing power. In the latter case he could be presented with a skull replacing his head and with other insignia of death. Gods could change their localities and resultant associations. The sun god was, naturally, a sky god; but at sunset he passed to the underworld to become one of the lords of the nights, and emerged at dawn with the insignia of death. To depict him during his journey through the underworld, it was necessary to add attributes, such as those of the jaguar, or black, the colour of the underworld, or maize foliage, which also



connoted the surface of the world and the underworld. In a similar manner celestial dragons could become terrestrial monsters. These varying aspects of deities make the elucidation of Maya religion more difficult. Many, perhaps we can say most, Maya gods blend the features of animals or plants with a human aspect. The Maya may have made their gods in their own mental image, but hardly in their physical image.

Sky Gods. The sun and moon were the most important of the celestial deities (Fig. 19e-g, page 239). Around them was built a veritable cycle of legends. Sun and moon, prior to their translation to the skies, were the first inhabitants of the world. Sun was patron of music and poetry and was a famed hunter; moon was the goddess of weaving and childbirth. Sun and moon were the first to cohabit, but moon, who was unfaithful to her husband, earned an unenviable reputation for looseness, and her name became synonymous with sexual licence. Since flowers of the *plumeria* tree (*frangipani*) were the symbol of sexual intercourse, they came

to be associated with both sun and moon. The monkey had the same symbolic qualities. We find both these traditions reflected in hieroglyphic writing. From parallel beliefs in central Mexico we can add to the functions of the moon that of being goddess of maize and of the earth and probably all its crops. Sun and moon were finally translated to the sky. Moon's light is less bright than that of sun because one of her eyes was pulled out by sun. A widespread belief, still prevalent in Middle America, but clearly not shared by the Maya priest-astronomers, is that eclipses are due to fights between sun and moon. Honorific titles such as "lord" and "lady", "our father" and "our mother", or "our grandfather" and "our grandmother" were bestowed on sun and moon almost throughout the Maya area.

Itzamna was an outstanding deity in the hierarchic pantheon, but seems to have had few devotees among the rank and file. As with other Maya gods, there were actually four Itzamnas, one assigned to each world direction and colour. There can be little doubt that the Itzamnas are the four celestial monsters (often represented as two-headed alligators or lizards; sometimes shown as serpents with one or two heads) which are so prevalent in Maya art of all periods (*itzam* actually means "lizard" in Yucatec). Among the Chorti Maya of the eastern fringes of the Central area, sky monsters, known as Chicchan, are thought to be half human, half snake and are associated with world directions and colours. There are also terrestrial manifestations of the Chicchan. These celestial monsters are deities of the rain and, by extension, of the crops and food. They are probably local variants of the Chacs.

Other dwellers in the skies were the deities who were the planets, and the Chacs. Of the former the Venus god was of supreme importance in the Maya hieroglyphic records; the Chacs, like the Itzamnas, are rain gods, and have ophidian attributes (Fig. 16*b, d, e*, page 207). It is possible that they merely represent a different manifestation of the Itzamnas, but it is, perhaps, a shade more probable that they are elements of the simpler and older religion which survived, particularly among the peasants, in rivalry with the more occult deities, such as the Itzamnas, favoured by the hierarchy. At any rate, the worship of the Chacs is predominant among the present-day Yucatec Maya who have forgotten even the name of Itzamna.

The Chacs, as we have seen, were four in number and similarly set at the four sides of the world. They are popularly believed to

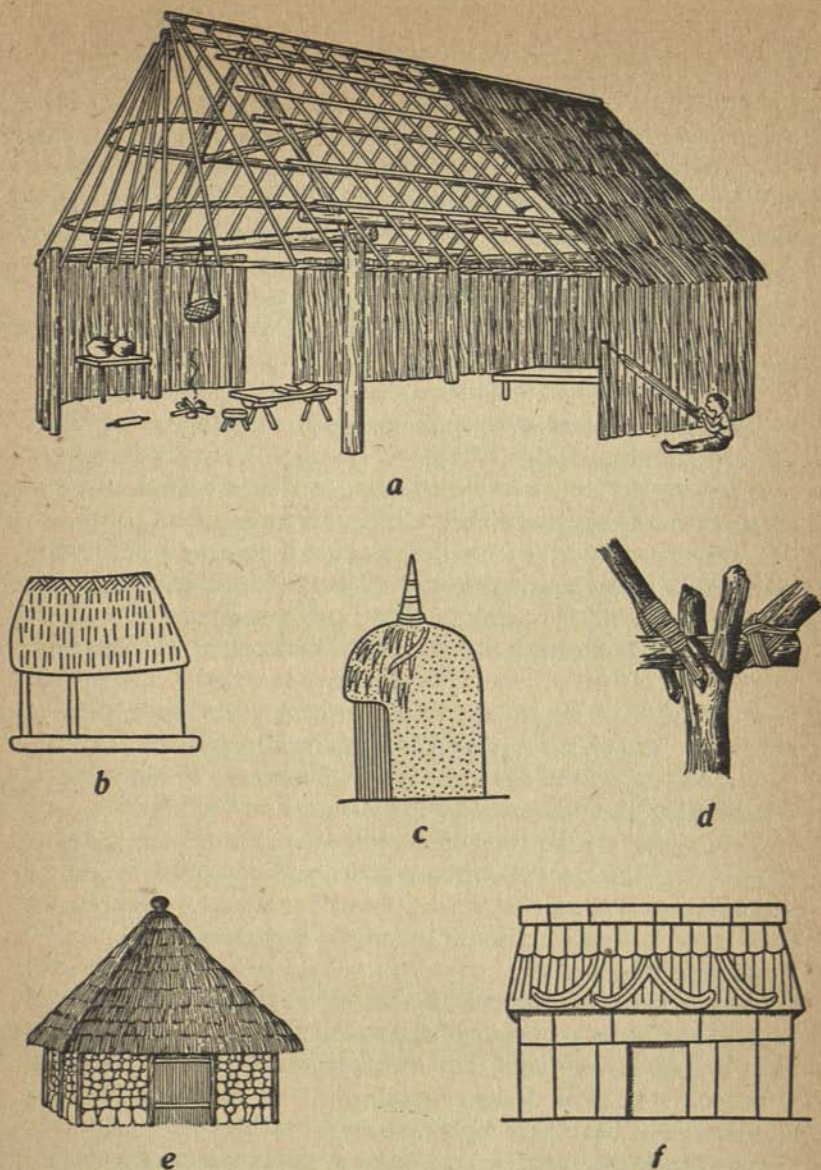


FIG. 18.—Maya Huts.

a: Typical Yucatec hut as still used. Interior shows bed (nowadays replaced with hammock), table with corn grinder, table with jars, tripod table for making tortillas, stool, hanging tray, three-stone fireplace, and woman weaving. Part of wall and most of thatching removed to show construction. *b, c*: Huts depicted on murals at Chichen Itza. This is the only record of round huts in the Maya lowland area. *d*: Joins are secured with lashings of bark or native vines; no nails are used. *e*: Zutuhil house in the highlands of Guatemala. Walls are of dry rubble lava masonry; thatch of grass capped with inverted bowl. *f*: Stone model of Maya hut in the façade of the *Monjas* building at Uxmal (about A.D. 900). (After Wauchope with additions.)

send rain by sprinkling a little water from calabashes which they carry. Were they to empty these calabashes at one fell swoop, the world would be flooded. Because of these gourds, they are sometimes known as "the sprinklers". They cause lightning. They also carry stone axes, which they hurl to earth, and these are thunderbolts. Polished stone axes, dating principally from the Mexican Period and later, are found in many parts of the Maya area, and are known as Chacs' axes. The association of stone axes with thunderbolts is world wide.

The Chacs are sometimes thought to be of gigantic stature, and the little frogs, called *no*, whose croaking announces rain, are their attendants and musicians. An amusing legend recounts the experiences of a mischievous boy who was taken as an attendant to the abode of the Chacs in the sky. Ordered to sweep the Chacs' residence, he swept out the frogs despite their indignant protests, and then, purloining the water gourd of one of the Chacs, he almost flooded the world by sprinkling too much water from it.

Kukulcan, as Quetzalcoatl was called in Yucatan, was the tutelary of Mexican invaders and, as such, was but a flash in the Mayan pan. Of supreme importance in the art of the Mexican Period, he appears to have been regarded as alien by the great body of the Maya. His ephemeral character is well illustrated by the fact that his name is quite unknown among the present-day Maya.

Earth Gods. Of the gods of the soil, those who have charge of the crops are the most important. A deity of vegetation in general and of maize in particular, a youthful personage who incorporates features of the young corn, is frequently represented in Maya art (Plate 10*b*; Fig. 16*f*, page 207; Figs. 19*a*, *d*, page 239). His head is used as a symbol for the number eight. In the more rugged parts of the Maya area gods of the soil are associated with prominent mountains, springs, the confluences of rivers, and other outstanding manifestations of nature. There is a little evidence that there may have been a group of seven deities associated with the surface of the earth, just as there were thirteen sky gods and nine gods of the underworld.

Various crops, such as beans, had their indwelling god, but the maize god, always depicted as youthful and often with maize growing from his head, was a god of all vegetation.

The jaguar god (Fig. 14, page 181), corresponding to the Mexican Tepeyollotl, god of the interior of the earth, is an important Maya deity of the surface of the earth or its interior, for the two

regions overlap. Of importance, too, is the old god, the Mam, who carries the symbol of the year and generally has a conch shell on his back, and is believed to cause earthquakes when he moves in his residence beneath the earth. The earth deities share a number of attributes, of which the water lily, shells, and other aquatic symbols, the Imix sign, and attributes of death are the most prominent.

Gods of the Underworld. The Aztec believed that there were three abodes of the dead. Warriors who had died in battle or on the sacrificial stone and women who had succumbed in childbirth went to a celestial paradise. The former escorted the sun from the eastern horizon to the zenith; the latter from the zenith to the western horizon. Persons who had died of sundry diseases, such as dropsy and epilepsy, and those who were drowned or had been struck by lightning (the axes hurled by the rain gods) went to Tlalocan, the home of the Mexican rain gods, called Tlalocs. This was a paradise in which all edible plants grew in great profusion and, according to one source, formed the lowest celestial compartment. The third abode of the dead was Mictlan, apparently the lowest compartment of the underworld, whither departed those who had not qualified for either of the other two lands of the dead. The god and goddess of death ruled this realm.

How closely these concepts were paralleled in Maya belief is not certain. There is no evidence of a celestial abode for warriors, which may have been an outgrowth of Mexican warrior cults, but there was definitely a Maya equivalent of Tlalocan and, at least in later times, an underground abode of the dead, ruled perhaps by Kisin, whose name implies the stench of the charnel house, and who is probably the death god so frequently represented in Maya codices (Fig. 13, No. 22, page 163).

The glyphs of the nine lords of the nights and of the underworlds have been identified, but their names are unknown, although the first of the series, the night sun or the sun god during his nightly passage from west to point of rising in the east, is easily recognized (page 231).

Deification of Periods of Time and Numbers. The twenty days which formed the Maya "month" were regarded as gods and were the recipients of prayers. The days were in a way embodiments of gods, such as the sun and moon, the maize deity, the death god, and the jaguar god, which were drawn from their various categories to be reassembled in this series. The numbers which accompany

the days were also gods and perhaps correspond to the thirteen sky gods, although they are also in the same sequence as thirteen of the day gods. The fact that in this series of thirteen occur gods of the underworld or the surface of the earth does not seriously militate against their identification as the original thirteen gods of the heavens, for Maya deities pass elusively from one region to the other. Similarly, all periods of time appear to have been regarded as gods, and Maya divinities form and re-form in bewildering aggroupments, thereby supplying the priest-astrologer with means to hedge on his prophecies, but sorely perplexing the modern student.

Sundry Gods. In addition to the deities assigned to sky, earth, and underworld, there were various gods not so easily placed, albeit temporarily, in those categories. At the time of the Conquest, the Maya had various gods who were the patrons of trades, such as the tutelaries of merchants, beekeepers, and tattooers. It is not improbable that several of these were merely manifestations of specialized aspects of gods whose main functions were of a more general nature. Various deified heroes reported for sixteenth-century Yucatan probably reflect Mexican influences, but deities of animal origin, such as the bat, the dog, and the Moan birds, owls which stand above the celestial dragons and also sent rain to mankind, were worshipped during the Classic Period, as was the god of the flint or obsidian blade. On the other hand, we have no information on a Maya god of fire, although among the Mexicans that deity was of considerable importance. The Maya recognized a supreme being, the creator god, but, like the Mexicans, appear to have accorded him little worship, presumably because he was regarded as remote from human affairs.

I believe the outstanding characteristics of Maya religion to be these: (1) Reptilian origin of deities of the rain and of the earth; features of snakes and crocodiles, merged and fantastically elaborated, alone or blended with human characteristics, distinguished those gods (Fig. 10b, c, page 121). Deities with purely human form are not common in Maya art. (2) Quadruplicity of various gods together with association with world directions and colours, yet a mystic merging of the four in one, a process somewhat comparable to the Christian mystery of the Trinity. (3) Duality of aspect, for deities could be both benevolent and malevolent and in some case, seemingly, could change sex. This duality also extends to age, for in the case of several deities, functions are shared

between a youthful and an aged god. Malevolence is expressed in art by the addition of insignia of death. (4) Indiscriminate marshalling of gods in large categories so that a god might belong to two diametrically opposed bodies, becoming, for instance, a member of a sky group as well as of an underworld group. (5) Great importance of the groups of gods connected with time periods. (6) Inconsistencies and duplication of functions arising from the imposition of concepts originating among the hierarchy on the simpler structure of gods of nature worshipped by the early Maya.

It is interesting to reflect that the Maya, who had resisted the earlier impact of alien cults such as that of Kukulcan, accepted Christianity, but not as a substitute for their old gods. Instead, they quietly amalgamated the two religions to their liking. Maya gods and Christian saints were welded into a smoothly functioning pantheon with the Christian God at the head. In Yucatan the Chacs were mounted on the horses of the Spaniards and renamed after the archangels, and the moon goddess was merged in the Virgin Mary; in highland villages of Guatemala saints of the Catholic Church, mountains, and Maya day names share the prayers said by shamans at crosses set at the world directions. The crosses themselves are the recipients of prayers.

In some parts there is a division between the functions of saints and of pagan gods; the former rule the towns and their activities, the latter guard the forests and milpas and those who work in them. Nevertheless, very few Maya could tell you which are the Christian and which the pagan elements in his religion. Indeed, all would be indignant at any suggestion that they were part pagans.

THE SOIL AND THE MAIZE

Looking back on what I have just written, I realize that it is a dull, lifeless catalogue, in the same category as one of those cards, not written with the milk of human kindness, which social workers label Case History No. 1286391. Such treatment may suffice for the celestial gods, but I have dismissed the maize god in two lines, and that won't do.

Maize was a great deal more than the economic basis of Maya civilization; it was the focal point of worship, and to it every Maya who worked the soil built a shrine in his own heart. With-

out maize the Maya would have lacked the leisure and the prosperity to erect their pyramids and temples; without their mystical love for it, it is improbable that the peasants would have submitted to the unceasing and stupendous programme of building directed by the hierarchy. The Maya labourer knew that he was building to conciliate the gods of sky and soil, on whose care and protection his maize field was dependent.

Love of the soil is found among peasants the world over, but I doubt that there is a more strongly mystical attitude toward its produce than in Middle America. To the Maya, corn is peculiarly sacred. Even today, after four centuries of Christian influence, it is still spoken of with reverence and addressed ritualistically as "Your Grace". It is the gods' supreme gift to man, to be treated with full respect and not a little humility. Before clearing the land or sowing the Maya fasted, practised continence, and made his offerings to the gods of the soil. Each stage in the farming round was a religious celebration.

More than 200 years ago a friar summed up the highland Maya's attitude toward maize in these words: "Everything they did and said so concerned maize that they almost regarded it as a god. The enchantment and rapture with which they look upon their milpas is such that on their account they forget children, wife, and any other pleasure, as though the milpa were their final purpose in life and source of their felicity." This is very much to the point, but the writer made one mistake. The Indians did regard the maize as a god, although they took care not to let the friars know it.

A somewhat similar attitude is revealed by the comment of a Mam Maya from western Guatemala on the white custom of burying in niches. The Indians, he said, consider it better to feed the earth with their dead bodies in payment for the products it gives them when they are alive—"The earth gives us food; we should feed it."

In our urban civilization the productivity of the land is something rather remote which is taken for granted. It is associated more with chain stores and tin-openers than with the soil, and, if our thoughts go a step back of that, we envision a man on a tractor or behind a team of horses, something picturesque, but unrelated to our efforts to earn our daily bread.

The Maya, who has to struggle against climate, tropical pests, and a too exuberant vegetation, sees things in a very different

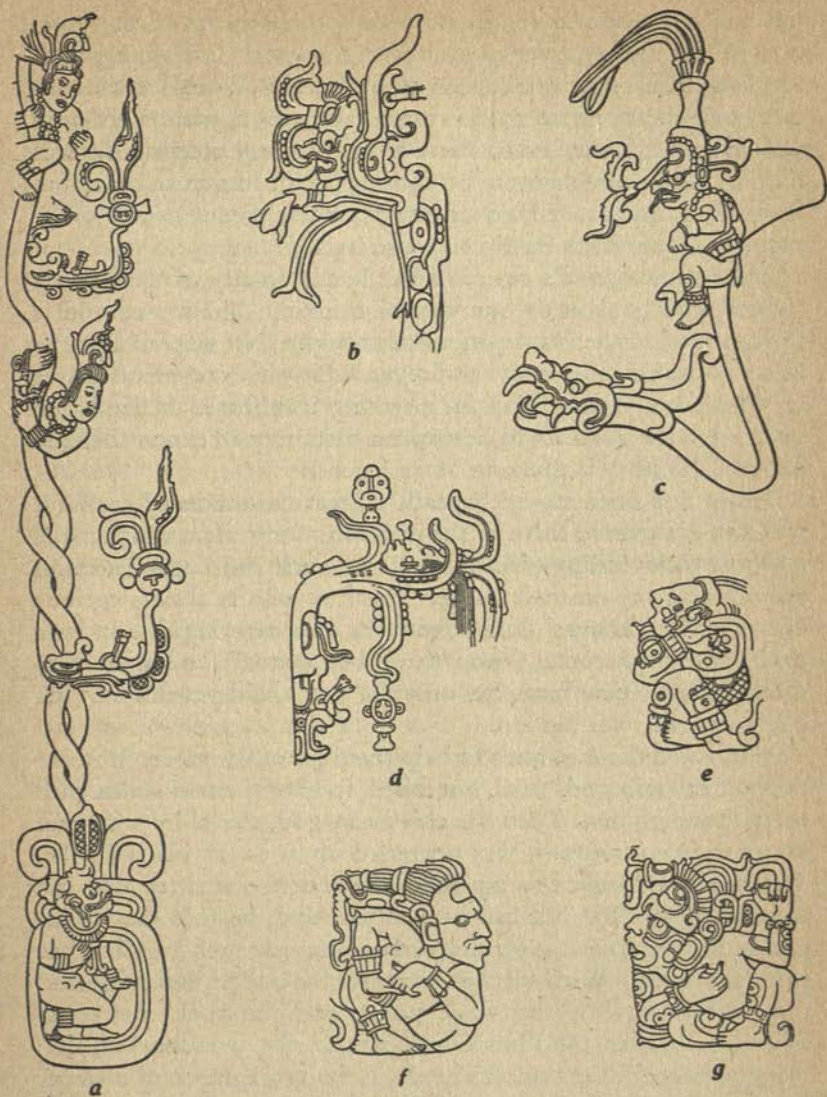


FIG. 19.—Maya Gods of the Classic Period.

a: Representations of the youthful maize god with maize head-dresses clinging to the body of a snake (Copan). *b*: The long-nosed god emerges from a serpent's jaws (Copan). *c*: The long-nosed god forming the head of a staff which terminates in an alligator's head (Quirigua). *d*: The head of the maize god as an ear of corn on a maize plant (Palenque). *e*: The moon goddess grasping the moon sign (Quirigua). *f*, *g*: The sun god (Quirigua).

light. His livelihood depends literally on the sweat of his brow, not on the steaming flanks of a pair of horses. Even now, with the benefit of crops introduced from the Old World to vary his diet, 80 per cent of his food is maize. He eats it with every meal year in and year out, and so the failure of that one crop is a disaster to him. The maize seems to be fighting beside him in an unending defence against every kind of enemy, trying to survive in order that the man and his family may also live.

The conception of a crop as a live being, an ally striving at our side, is utterly alien to our way of thinking, but it was and is fundamental in the Maya pattern of thought. No wonder that the Maya personified the maize and regarded it with a reverential love which we could never feel for anything inanimate. Maize is the gift which the gods could bestow on man only after considerable effort. The story is given in Maya legend:

Maize was once stored beneath a great mountain of rock. It was first discovered there by the marching-army ants, which made a tunnel to its hiding-place beneath the rock and began carrying the grains away on their backs. The fox, who is always curious about his neighbours' doings, saw the ants carrying this strange grain and tried some. Soon the other animals and then man learned of this new food, but only the ants could penetrate to the place where it was hidden.

Man asked the rain gods to help them get at the store. In turn, three of the rain gods tried, but failed, to blast the rock apart with their thunderbolts. Then the chief rain god, the oldest of them all, after many refusals, was prevailed upon to try his skill. He sent the woodpecker to tap the surface of the rock to find the weakest spot. When it had been discovered, he told the woodpecker to take cover under an overhanging ledge while he tried to split the rock. With all his strength he hurled his mightiest thunderbolt against the weak point, and the rock was riven asunder. Just as the thunderbolt struck, the woodpecker, disobeying orders, stuck out his head. A flying fragment of rock hit him on the poll, causing it to bleed freely, and ever since the woodpecker has had a red head. The fiery heat was so intense that part of the maize, which had been entirely white, was charred. Some ears were slightly burned, many were discoloured with smoke, but some escaped all damage. There resulted four kinds of maize—black, red, yellow, and white.

This legend is repeated in the Book of Chilam Balam of Chu-

mayel in allegorical language: "Three, seven, eight thousand was the creation of the world, when he who was hidden within the stone, hidden within the night was born," and "occurred the birth of the first precious stone of grace, the first infinite grace. . . . Not yet had he received his divine rank. Then he remained alone within the grace. Then it was pulverized. There were his long locks of hair . . . his divinity was assumed when he came forth."

The precious stone of grace is jade, which in Mexican allegorical writing is the ear of corn before it ripens. The passage states that the green corn, like precious jade, is hidden within the rock. Then the rock is smashed asunder, and the maize is born and becomes divine. The maize god always has long hair, perhaps derived from the beard of the maize in its husk. Hence the reference to the long locks. The full passage is of some length and is replete with allegory and mysticism (in one paragraph Christian ideas have led to the identification of Jesus, as the Bread of Life, with the maize god). Parts are beyond our comprehension, but the general presentation well illustrates the reverential approach to this great source of food. In fact, the attitude of the Maya toward the soil and the fruits he grows reveals more about his mentality and his customs than any other single facet of his culture, for the Maya culture is fundamentally one of farming, with a complex religious structure as an outgrowth.

Before each task the Maya makes his offering to the gods who guard his field. Ceremonies at sowing time among the Mopan Maya of southern British Honduras will illustrate the religious setting.

The night before sowing, the helpers gather at the hut of the owner of the field. At one end of the hut the sacks of seed are laid on a table before a cross, and lighted candles are placed in front and to each side of a gourd containing cacao and ground maize. The seed is then censed with copal, and afterwards the hut, inside and out, is completely censed. The men, who have brought their own hammocks, lounge in them, passing the night in conversation and music and the enjoyment of a meal served at midnight. Sometimes the group prays in the church for a good crop. The purpose of this vigil is to ensure that the crop will not be endangered by the incontinence of any member of the group (the Mam, the Chorti, the Kekchi, and other Maya groups observe periods of continence of up to thirteen days at sowing time).

Looking back twenty years, I can see the group, most of them

deep in shadow, for the guttering candles throw only a small circle of light. One or two are sitting in their hammocks; a third is lying back in his hammock with one foot dangling over the edge. Everyone is wrapped in a thin blanket, for the April night is cold and the chill air has no trouble in finding the spaces between the poles that form the walls of the hut. Conversation in soft, sing-song Maya starts and dies like puffs of wind. Outside, the constellations of the tropics dawdle across the sky; they seem so close, one feels like raising his hand to push them on their course. Curiosity can hardly be delaying them; they have seen such vigils for many centuries. At daybreak the owner of the land goes to his field ahead of the rest of the party. There, in the centre of the field, he burns copal and sows seven handfuls of maize in the form of a cross oriented to the four world directions, and recites this prayer:

O god, my grandfather, my grandmother, god of the hills, god of the valleys, holy god. I make to you my offering with all my soul. Be patient with me in what I am doing, my true God and [blessed] Virgin. It is needful that you give me fine, beautiful, all I am going to sow here where I have my work, my cornfield. Watch it for me, guard it for me, let nothing happen to it from the time I sow until I harvest it.

Rites of the same general type precede clearing the land and burning off the scrub when it is dry. Typical of the religious context of the agricultural year are the ceremonies to the Chacs still held in villages of Yucatan when rain is needed. Not a man in the village fails to attend. The first task is to fetch the water needed in the preparation of the food offerings. This has to be virgin water from a sacred cenote where women never go. Once this has been brought, no one must return home, for if anyone had intercourse with a woman during the ceremony, the rains would not come. Accordingly, the men sling their hammocks within the cleared area, usually on the outskirts of the village.

Following two days of preliminary ceremonies, the shaman offers at dawn of the third day thirteen tall gourds and two shallow gourds of *balche* to the Chacs and the guardians of the milpas. Following a chant by four assistants, the *balche* is distributed among the assembly, and everyone must take a little, for *balche* purifies one of evil. Birds are then brought forward. Four assistants called chacs hold each bird in turn by its wings and legs

while the shaman pours *balche* nine times down its throat and dedicates it to the rain gods. After that the birds are killed.

Thirteen times *balche* is sprinkled on the altar, and after each sprinkling is offered to the members of the congregation. By noon the food is ready, and the main ceremony can commence.

A boy is tied by his right leg to each post of the altar. These four boys represent frogs, the attendants and musicians of the rain gods. As the ceremony proceeds, they croak in imitation of frogs announcing the approach of a storm. An older man, selected to impersonate the chief Chac, is reverently carried to a cleared space a few yards east of the altar. He is provided with a calabash and a wooden knife, for, as was related earlier, calabashes are carried by the Chacs and water sprinkled from them causes rain. The wooden knife represents the implement with which they produce the lightning.

From time to time this impersonator makes sounds like thunder and brandishes his wooden knife. Sometimes in place of a single impersonator of the chief Chac, four men, one at each corner of the altar, represent the four Chacs of the world directions. Each time the shaman recites a prayer or offers *balche*, they dance nine times around the altar.

The altar is piled with food and drink. Thirteen tall gourds and two dishes of *balche*, nine pails of broth from the sacrificial birds, four lots each of nine piles of tortillas made of maize and squash seeds, and nine piles of various other kinds of tortillas are placed on it.

After this provender has been offered to the gods (a time-consuming ceremony), all retire so that the gods can feast on the offerings without interruption. When it is judged that the gods have concluded their repast, the shaman returns and pours *balche* on the head of the impersonator of the chief Chac. The food, minus the spiritual essence already extracted from it, is divided among the men, and except for one or two minor ceremonies the rain petition is finished.

Great stress is laid on imitative magic. The croakings of the frogs, the noises like thunder, the impersonation of the rain god with the symbols of rain and lightning are basically magic. Important, too, is the use of the sacred numbers seven, nine, and thirteen. The purification pattern runs through the ceremony: virgin water must be used, theoretically the sacrificed birds are virgin, continence is essential, and *balche* is a purifier. In ancient

times this ceremony would probably have been not a village, but a district, rite, and children might have been offered instead of turkeys.

Yet, these rites must not be regarded as so many ethnological data; they are the expressions of Maya preoccupation with the living maize and the gods who nourish him and give him drink. Much of the ancient pomp and ceremony is no more, but we can be sure that the Maya peasants, gathered in the courts of Tikal or Palenque for some ceremony, recognized with satisfaction the representations of the maize god, the Chacs, and the earth gods carved on the façades and roof combs of the temples, and were content to continue building to their glory and serving the priests who served them. They had given their hearts to the land and could have anticipated Kipling's lines: "And Memory, Use, and Love make live us and our fields alike."

CREATION MYTHS

The fullest creation myth is given in the Quiche-Maya book of legend and history called the *Popol Vuh*, but it recounts only three creations, whereas it is probable that the Maya believed the world had been created four or five times. According to the *Popol Vuh*, at the beginning there was only water. The creator gods cried, "Earth", and the land appeared. They covered it with trees, marked the courses for the rivers, and filled it with animals, assigning to each species its habitat. As the animals could not speak and so could not offer praise or supplication to their creators, the gods decided to make a superior species of mud. These beings could speak, but they had no intelligence and no strength, and, being of mud, they dissolved in water. The dissatisfied gods destroyed them.

The gods then made beings of wood. These spoke, ate, and reproduced themselves, but they had faces without expression, and, being of wood, they were dry, bloodless creatures with yellow flesh. Their intelligence was limited, and they showed no gratitude toward their creators. The discouraged gods sent rains to destroy them. These waters, like black resin, darkened the face of the earth. Then the animals turned against these Pinocchios. Jaguars and eagles devoured them; sticks and stones rose and hit them. Their dogs and even their water jars, cooking pots, grinding stones, and griddles joined the revolt, chasing them to the roof-

tops, up trees, and into caves. Their dogs said, "Why did you give us nothing to eat? You scarcely looked at us, but you chased us and threw us out. You always had a stick ready to strike us while you were eating." Their griddles and cooking pots said, "Pain and suffering you have caused us. Our mouths and our faces were blackened with soot; we were always put on the fire and you burned us as though we felt no pain. Now you shall feel it, we shall burn you."

From the few puppets which escaped are descended the monkeys. In the final creation the flesh of the ancestors of the Quiche was made of a gruel of yellow and white maize, which was taken from its hiding-place beneath the mountain. These first men, four in number, were too gifted. They could see to the uttermost part of the earth. The gods, not wishing man to be almost their equal, dulled their eyes with a light mist, just as one obscures a mirror by breathing on it, and their vision was limited. Wives were created for these four men. Then the dawn came; the morning star arose; the sun rose. These men worshipped their makers. They were the ancestors of the Quiche, the Cakchiquel, and other Maya peoples of the highlands.

The incident of the revolt of the utensils appears also in Peruvian mythology. In all Middle America creation myths the culminating point is not the creation of man, but the dawn. It must be remembered that the Maya did not set the human race so far apart from the rest of created life as we do, but then the Maya had, and still has, a deeper sense of his relative unimportance in creation.

SACRIFICES

A point well illustrated in the above brief abstract is the demand the gods make for worship and sacrifice. In Maya eyes the gods were not benevolent dispensers of indiscriminate charity; they did not grant favours, but traded them for offerings of incense, food, and blood. It is a rather pleasant concept, revealing somewhat of a desire on the part of the Maya not to be over-beholden to anyone and disclosing also an absence of abasement. In the Kekchi prayer the traveller asks the earth god for game after gently reminding him that he has received an offering.

Human sacrifice was certainly practised by the Maya in all periods of their history, but never on the same scale as by the Aztec, who wallowed in the blood of their sacrifices. It is probable

that the practice was most developed in the Mexican and subsequent periods, when militarism had its basis in a system of strengthening the gods with human blood.

I have described in Chapter V a sacrificial scene. I shall now quote the most dramatic account we have of such a ceremony. It comes from testimony given in Yucatan in 1562 when charges of relapses into paganism by baptized Indians were being investigated. It was found with a mass of similar documents some years ago by France Scholes in the Archives of the Indies, Seville.



The inquiry was held only twenty-one years after the final conquest of Yucatan, when the hold of Christianity on the natives was still weak. The number of Franciscan friars had been quite inadequate to instruct the masses of converts in the fundamentals of Christianity or to wean the natives, particularly the older generation of the former ruling class, from their pagan practices and beliefs.

The witness was Juan Couoh, appointed schoolmaster at Yaxcaba by the friars, a young Maya who had probably been educated by the Franciscans. He appears to have been torn between this loyalty to the old ruling caste and his loyalty to the new religion in which he had been educated. In the Maya spirit of compromise,

he kept a foot in each camp, for although a catechist, he confessed to having kept hidden in a cave sixty idols which had belonged to his father and to making sacrifices to them. He also admitted to having been present at a ceremony in a nearby church, at which a deer and some turtles had been sacrificed. He then went on to relate this story:

I was in my house one Tuesday evening, when at midnight Diego Pech, the cacique of Yaxcaba, sent for me to read a letter for him. On my way there I passed by the church where I saw Pedro Euan, principal of Yaxcaba, who in ancient times had the office of sacrificing men and boys to the idols. He had a youngster from Tekax, in the Province of Mani, with his hands tied behind his back. This boy, Francisco Cauich, had gone on a holiday to Yaxcaba to visit some relatives, who lived there. He was seated next to the pedestal of the altar in the church, and, as I have said, with his hands tied behind his back. A large candle was burning. I asked them what they were doing there, and Pedro Euan replied, "why do you want to know? Go and read the letter in the cacique's house, and then return here and you will find out what we are doing."

I continued on to the cacique's house, where I found assembled Diego Pech, the cacique, Juan Ku, cacique, Juan Tzek, principal, Francisco Pot, Gaspar Chim and Juan Cambal, all three former pagan priests, Lorenzo Ku, school bailiff, and Diego Ku, his father. These I recognized; I don't recall if others were present.

When I arrived, Diego Pech reproached me, saying that I was greatly indebted to him for support in the past, yet I was repaying him by getting the town mixed up with the friars, although I didn't really believe them when they said I was like a son to them. He went on to say that they were going to sacrifice a boy and I must agree to this and witness the ceremony.

I replied that it was a very serious matter, and it was not right that it should be done. Christians did not do such things. Diego Pech told me that I must do as he ordered, and he sent for Pedro Euan who was guarding the boy in the church. When Pedro Euan came he berated me for not wanting to do as I was told. I replied that I would refuse. They could do as they wished, but I should take no part in it. Then Pedro Euan caught me by the hair [the symbol of taking a prisoner who

would be sacrificed], and said, "If you obstruct us and do not agree to take part, we will do to you what we are going to do to this boy." I was so frightened that I gave way and agreed to what they said.

Then all rose and fetched ten idols, which they had brought from Diego Pech's maize field, and the other things necessary for the sacrifice, and took them to the church. When they entered they neither prayed nor bowed to the altar, but went and placed the ten idols in a line on some leaves of the *copo* [a *Ficus*, used in Maya ceremonies]. In front they laid a large mat, and on top of it they placed a large flint knife with its handle wrapped in a white cloth. Then Gaspar Chim and Pedro Pech, former pagan priests, took two large candles, and all sat down on small stools, and they ordered the Indian seated by the altar to be brought, and they seated him in their midst. His hands were tied, his eyes were covered with a cloth, and he wore no shirt, only short drawers. Gaspar Chim said that I would tell the friars about this, and under the threat of being myself sacrificed, I promised not to tell of what I saw. Then Diego Pech said to the youth whom they were going to sacrifice, and who was crying, "Be of good heart. Do not be upset. We are not going to harm you. We are not sending you to hell, but to glory in the sky, as our ancestors used to do."

"Do as you will," the boy replied. "God who is in heaven will aid me."

Then Gaspar Chim said "Untie him and do what must be done before it dawns and people are around."

Thus they untied the youngster and threw him on the mat. The priests handed over the candles they held, and four of them caught hold of the boy and placed him in a supine position, holding him by his hands and feet. Pedro Euan, taking the flint knife, made an opening on the left side of the youth's heart, grasped the heart and cut the arteries with his knife. He gave the severed heart to the priest, Gaspar Chim, who made two cuts like a cross in its extremity and then raised it on high. Next he took some part—I do not know what it was—and placed it in the mouth of the largest of the idols which was that of Itzamna. Then they took the boy's body and heart and his blood, which they had collected in a large gourd, as well as the idols, and all went with them to the cacique's house. I do not know what they did there. As they left they again warned me

not to speak to the friars of what I had seen. "Even if they burn us alive, we must not say a word," they added.

I went to my house for what they had done seemed very evil.

In translating this passage, I have converted Couoh's testimony from indirect to direct speech and abbreviated a few sentences. Whether the schoolmaster was as unwilling a witness of the ceremony as he made out will never be known. If the local leaders feared that he might give them away, why did they summon him from his house at midnight? Perhaps they thought that they could thereby involve him so deeply in the proceedings that he would not dare to speak. In any case, it is a tense story of overwhelming drama, the horror of which is enhanced by the knowledge that it took place in a building dedicated to the worship of Him who said, "Whoso shall offend one of these little ones . . ."

This belief that the deities who sent the rain desired offerings of children was widespread, for such sacrifices were customary not only in Mexico, but in various parts of South America. In testimony in another case in the investigations of relapses into paganism, it was brought out that the bodies of three children who had been sacrificed were thrown into a deep cave, the mouth of which was then covered with a large stone. A similar disposal of the bodies of children sacrificed to the rain gods was practised in Central Mexico. However, skeletal material recovered from the sacred cenote at Chichen Itza includes remains of men and women as well as children. Perhaps an adult was needed to bring back the message of the gods. Child victims of sacrifice were usually orphans, distant relatives adopted by the head of a household, or youngsters kidnapped or purchased from another town (Francisco Cauich was from another town). We learn that in one sale the price was five to ten red beads, that is, of *Spondylus* shell; in another the little victim was bought for a fathom of large beads. Children were frequently chosen as sacrificial victims because of the idea that sacrifices should be *zuhuy*, as the Maya say—that is, uncontaminated, virgin, whether speaking of beings or, just as we do, of virgin forests or lands. *Zuhuy* water came from depressions in rocks or was collected from plants; it had not been contaminated by contact with the soil. On the other hand, the sun and some other gods required the nourishment of adult victims; small children would hardly supply the needed strength.

Sacrifice by removal of the heart (Fig. 9*d*, page 109; Fig. 10*b*, page 121) was the usual method, but in some ceremonies the person to be sacrificed was tied to a stake or wooden frame (Fig. 2, page 21) and shot with arrows by the assembled men, who danced around him. At the beginning of the ceremony, the victim himself danced, but later, while the rest continued their steps, he was tied to the stake and a white mark placed over his heart to mark it as the target. Such active participation of the one who was to die in the preparatory ceremonies was usual in Mexican ritual, and, in fact, this form of arrow sacrifice almost certainly derives from Mexico, where it was particularly associated with the worship of Toci, the mother goddess of fertility.

On certain occasions the body of the victim was rolled down the steps of the pyramid to the bottom, where it was flayed. The priest then dressed in the skin for a dance. This custom of flaying the body and then donning the skin was quite common in Mexico, where it was practised in honour of the god Xipe Totec in ceremonies sponsored by the warrior orders of Jaguars and Eagles, as well as in festivals of certain goddesses of the soil and crops, including the above-mentioned Toci. The practice was probably introduced by the Toltec invaders; one cannot imagine the Maya devising such a gruesome ritual.

Sometimes the victim was hurled from a height on to a pile of stones below, and then his heart was removed. This again was a form of sacrifice associated with the worship of Toci, but in Yucatan it was incorporated in ceremonies in honour of Itzamna.

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Adult victims were confined in wooden cages. Among the Lacandon, we learn, it was customary to place the prisoner in these

cages only at night, and guards slept on top to prevent their escape. By day the future victims were allowed to roam the town, but with attendants vigilant against any attempt to escape.

The bodies of persons who had been sacrificed were given to participants of rank in the ceremony; the hands, feet, and head were reserved for the priest and his assistants. To judge by Mexican beliefs, the victim represented the god in whose honour he died. Therefore, by eating his flesh, one endowed himself with certain of the qualities of the deity in question.

The marked similarity between these less usual forms of human sacrifice, as reported by Spanish observers of the sixteenth century, and practices in central Mexico suggest that most of them were adopted in the Maya area as a result of Mexican influences. One thinks immediately of the Toltec invasions, but it is possible that some were transmitted with the early influences from Teotihuacan apparent, particularly at Kaminaljuyu, in the early Classic Period. Indeed, there are representations of the Mexican rain gods, the Tlalocs, on Maya stelæ of the Central area, and the little scene of the arrow sacrifice (a spear is used, for at that time the bow was unknown) is scratched on the walls of a room at Tikal (Fig. 2, page 21).

Human sacrifice is shocking, but one can appreciate that it is logical if he accepts the premise that the gods need human blood to give them strength to perform their tasks, and its corollary that it is the duty of a devout people to provide it. There is, too, some mitigating evidence that on some occasions, at least, the victim was given a drug before the ceremony. This might have been to spare him suffering, but it is equally possible that it was an insurance against any unseemly struggle to resist. At least it can be said in defence of the Maya that everyone (including those to be sacrificed) believed that the victims died for the good of all. One doubts whether such unanimous approval supported the execution of Salem's witches, who were victims of mass hysteria, not chance sufferers for the common weal.

In addition to human beings, offerings to the gods included animals, agricultural products, cooked meat in sauces, copal incense, rubber, flowers, and such precious objects as jade, shell beads, and prized feathers. The range of sacrifices may be gauged from this comment by Bishop Landa: "They always smeared the faces of their demons with the blood of everything there was, namely birds of the sky, animals of the land, or fish of the sea. And other

Sacrifice by removal of the heart (Fig. 9*d*, page 109; Fig. 10*b*, page 121) was the usual method, but in some ceremonies the person to be sacrificed was tied to a stake or wooden frame (Fig. 2, page 21) and shot with arrows by the assembled men, who danced around him. At the beginning of the ceremony, the victim himself danced, but later, while the rest continued their steps, he was tied to the stake and a white mark placed over his heart to mark it as the target. Such active participation of the one who was to die in the preparatory ceremonies was usual in Mexican ritual, and, in fact, this form of arrow sacrifice almost certainly derives from Mexico, where it was particularly associated with the worship of Toci, the mother goddess of fertility.

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things which they had they used to offer. They removed and offered the hearts of some animals; others they offered whole. Some were alive, some dead; some raw, some cooked. They also made great offerings of bread and wine, maize preparations and *balche* [fermented honey], and of every kind of food and drink which they used."

In many parts of the Maya area, particularly in the western highlands of Guatemala, offerings of turkeys, various preparations of maize, beans, and squash seeds, as well as flowers, are still made to pagan deities. As we have seen, offerings are still made in Yucatan to the Chacs, and in the remoter villages of the peninsula no Maya will start to clear his land or plant his crop without an oblation, usually of copal and *posole*, to the gods of the soil (the black smoke of the copal represents the rain clouds; *posole* is a popular maize gruel). The sacrifice of one's own blood was very common. Usually a cord set with thorns was passed through the tongue, a method represented in Maya sculpture and on the murals of Bonampak. The blood was allowed to drip on strips of bark-paper, which were then offered to the gods (Plate 12). Landa tells that the stings of sting rays were used by the priests in drawing blood, and, as already noted, these are frequently found in graves. He also says that blades of a reedy grass were passed through the holes in tongue and ears. Another writer mentions that in the Alta Verapaz blood was drawn twice a day from arms, legs, nose, tongue, ears, and all members of the body, sixty, eighty, or one hundred days (i.e., three, four, or five "months") before a big festival. The usual sources of blood were tongue, ears, elbows, and the penis. Sacrificial blood-letting was also prevalent throughout Mexico.

THE PRIESTHOOD

In Yucatan the head of the hierarchy was called Ah Kin Mai or Ahau Kan Mai. Possibly the priesthood in each of the chiefdoms of Yucatan was organized independently under its local Ah Kin Mai. The head priest had certain administrative duties, such as examining priests and assigning them to areas where they were needed. He also taught hieroglyphic writings, genealogies, ceremonies for the cure of sickness, calendrical computations, astronomy, divination, and the ritualistic round. In addition to instructing divinity students in these subjects, he advised the civil

rulers on the prospects for any undertaking, such as war or marriage. This, of course, meant consultation of the astrological aspects, and divination by balancing the good and bad values of the days involved. It is probable that high priests had a considerable say in civil matters, for they were members of the council which elected a successor to a chief. They officiated only at the most important sacrifices involving the whole community.

According to Landa, the Ah Kin Mai was succeeded by his son, and the priesthood in general was recruited from the sons of priests and the younger sons of the nobility who showed an inclination for that vocation. His statement, if correct, indicates that the priesthood, even in those times of lay dominance, was sufficiently powerful to keep its chief office from passing to the family of the civil ruler. In any case, one can presume that the two families at the head of the civil and religious organizations were closely related by marriage and descent. That a high priest was succeeded by his son finds support in information from the Verapaz, where the high priest was elected from a certain lineage, a kind of Maya tribe of Levi. He ranked next in importance to the head chief, and was a member of his advisory council. Among the Tzotzil Maya of Chiapas, as in Yucatan, the priesthood was recruited from the sons of the nobility; among the Cakchiquel there were two high priests, apparently of equal rank, who were elected by the head chief and his council. One was in charge of sacrifices and the liturgical side of religion; the other was in charge of the religious and astrological books and was responsible for all divinatory matters. Actually, the civil high chief, the *halach uinic*, also performed certain priestly functions, for, as already noted, his title is translated as either "governor" or "bishop" in an early Maya-Spanish dictionary.

The regular priests were called *Ah Kin*, "he of the sun", in Yucatan. They performed the round of communal sacrifices and, after consulting their hieroglyphic books, made divinations. The *chilans* were prophets and soothsayers. They prophesied after consulting the divinatory almanacs and also received divine inspiration through visions. The *chilan* retired to his house, where, in a trance, he received his message from a god who placed himself on the ridgepole of the house. The priests assembled to hear the prophecy or the message with faces bowed to the ground. It is probable that the *chilan's* visions were induced by narcotics, such as tobacco mixed with lime. More potent drugs such as peyote

or *Datura* may have been used here as elsewhere in ancient America, although neither of these is native to the Maya area. Before consulting their books, the *chilans* sprinkled the wooden covers with *zuhuy* water, brought from deep in the woods where no woman had penetrated.

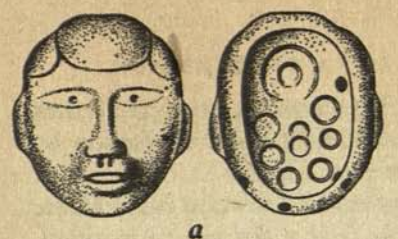
Presumably the *chilan* was a priest who had specialized in this branch because of his gift of vision, for no one without training as a priest could have had sufficient knowledge of the divinatory side of the calendar. The functions of regular priests and *chilans* overlapped to a considerable extent.

Tearing out the heart of a sacrificial victim was the duty of a group of priests known as *nacons*. They passed it to the *Ab Kin*, who carried out the remaining ceremonies. Four elderly men, known as *chaacs* (same title as that of the rain gods), served as lay assistants to the priests. Among their duties was that of holding the arms and legs of the victim when he was sacrificed; they also made new fire on ceremonial occasions by twirling a stick.

An important duty of all members of the priesthood was divination. In its most advanced form this consisted of consulting the 260-day almanac and other periods of time and calculating the effects of the different influences; but there were other and simpler forms of divination which survive to this day as part of the training of village shamans or calendar priests. These are used principally for ascertaining such matters as the causes of sickness or the names of those who have caused it by black magic, the location of lost articles, whether a sick person will recover, or whether a girl will make a good wife. Usually seeds of the *pita*, beans, grains of maize, or, more rarely, pebbles are poured out of the shaman's bag and counted off in pairs or in fours. The answer depends on the number left over. Thus, in the Quiche town of Chichicastenango, if one or two is left over, a lost article will be found; if the remainder is three, the article will never be found. Sometimes the divination has to produce the same result four times running to be reliable. An early writer describes how a divination was made with maize to discover the direction in which a girl had fled.

Twitching of the muscles of the calf is another form of divination. The method varies in its details from village to village. In Mam territory a twitch of the left calf is bad; of the right, good; and no twitch at all is also good. In many areas the pulse is able to control the answer.

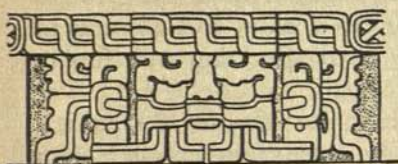
The Lacandon bring the hands together. If the nails of one



a



b



c



d



e

FIG. 20.—Sundry Art Forms.

a: Front and hollowed back of jade mask from Camp 6, British Honduras, showing marks of tubular drills used to remove cores, probably re-used as beads. b: Restoration of human skull with carved design. Found on the floor of a tomb at Kaminaljuyu and probably a trophy. c: Large stucco mask on a façade at Benque Viejo, British Honduras. d: Seated figure offering a "crown". Note treatment of hair and the snail on the head, as well as the human stool. From a sculpture recently found by the Mexican archaeologist, Alberto Ruz, at Palenque. e: Incised design in proto-Maya style on the Leyden plaque. This is the earliest dated piece yet found in the Maya area, and bears the date A.D. 320. It was found near the modern town of Puerto Barrios, Guatemala.

hand slip under those of the other, the answer is negative; if they are in line, the answer is yes. The Kekchi make divination by watching the death struggles of a turkey.

There are, too, many omens and portents known to every Maya. Thomas Gage, an English Dominican friar in charge at Amatitlan, near Guatemala City, wrote that the Pokomam Maya "are given to much superstition, and to observe cross ways, and meeting of beasts in them, the flying of birds, their appearing and singing near their houses at such and such times".

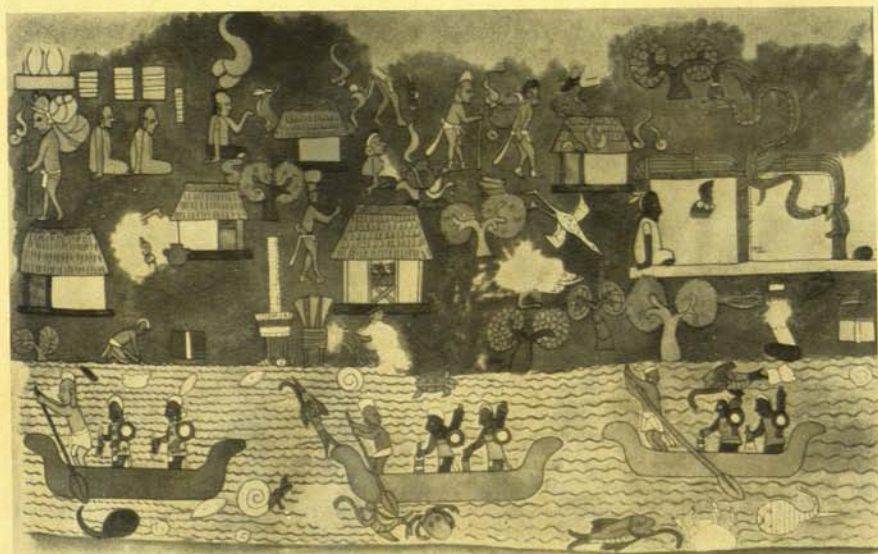
The treatment of sickness was an important part of a priest's duties, the first task being to divine the cause of the sickness, often found to have been "sent" by an enemy or to have been caused by "evil winds" or failure to make the required sacrifice and prayers to the gods or to carry out some ritual correctly. The Maya were keenly interested in medicinal plants, and there is a considerable body of medical literature written in Yucatec with European characters. None of these treatises antedates the eighteenth century, but Ralph Roys believes that they were compiled from earlier sources. They contain some European recipes translated into Yucatec, but these do not appear to have affected the native lore to any marked extent. A surprisingly large number of the Maya medical texts deal with the treatment of symptoms and are based on objective observation of the effects of certain plants on the human system. Some of these plants appear in the United States Pharmacopœia.

CEREMONIES

Ritualistic feasts and the preliminary periods of fasting and continence succeeded one another almost without a break. Fortunately, Landa describes those celebrated in Yucatan. Typical was the ceremony of the makers of wooden idols held in the month Mol, if divination showed the time to be favourable.

The carving of idols was regarded as dangerous work, which might bring illness or death to the maker or some member of his family, and so the carvers were persuaded with difficulty to undertake a commission of this nature. The idols were made of Spanish cedar, called the "god tree" in Yucatec.

As soon as the wood was ready, carvers, priests, and the old men called chacs—one might call them lay readers—shut themselves in a temporary hut enclosed with a fence until the work was



a



b

a: Temple of the Warriors, Chichen Itza, Mexican Period, about A.D. 1150. Soldiers in canoes in foreground; village behind. Note trees, feathered serpent, and women tending pot on fire.
 b: Bonampak, about A.D. 800. Trumpeters and masked dancers to left; musicians beating turtle shells, an upright drum, and men with rattles to right. (From water colours by Ann A. Morris and Antonio Tejada F.)



a



b



c

a: Masked and winged dancers. Note elongation of arms and legs and elimination of bodies. Copan, about A.D. 800. b: In the same tradition as a. Man with jaguar mask bows before occupant of house or temple. El Salvador, about A.D. 800. c: Naturalistic treatment. Two kneelers before individual on dais. Note feather cloak, shield, basket, and jaguar cushion at back of dais. Near Flores, Peten, about A.D. 750. (From water colours by Antonio Tejeda F.)



a



b



c



d

a: Vessel of plumbate ware. This, the only glazed pottery in ancient America, was traded far and wide. About A.D. 1000. b: Vessel of thin orange ware from a tomb at Kaminaljuyu, about A.D. 550. This ware was also traded widely, but at an earlier date. c: The jaguar god of the underworld is seated on the rim; the bust of a youthful god is on the front. Hun Chabin, Comitan, Chiapas, perhaps about A.D. 800. d: Vessel and lid representing a hunchback, about A.D. 550. Painted in pastel colours after firing. From tomb at Kaminaljuyu. (b and d from water colours by Antonio Tejeda F., photograph by Giles G. Healey.)



a



b



c



d

a: Seated woman, Palenque, about A.D. 750. Note delicate treatment of features. (*In Museo Nacional de Antropología, Mexico.*) b: Seated man, Simojovel, Chiapas, about A.D. 750. (*In Museo Regional, Tuxtla.*) c: Woman with child and dog, Xupa, Chiapas, about A.D. 750. (*Courtesy Middle American Research Institute, Tulane University.*) d: Seated woman, Coban, Alta Verapaz, Guatemala, about A.D. 750. Note width of face. (*From a drawing by Antonio Tejeda F.*)

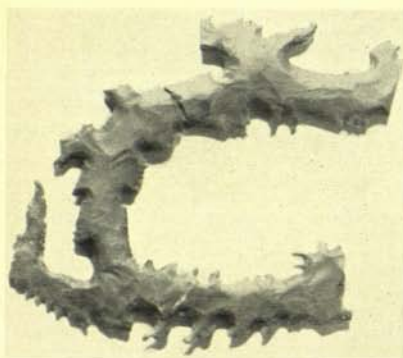


a



b

a: Perhaps the finest known jade, about A.D. 750. Found by A. Ledyard Smith, of Carnegie Institution of Washington, with other jades and pottery in a cache at Nebaj, Guatemala. *b*: Said to have been found at Teotihuacan, but clearly of Maya workmanship, about A.D. 800. It is nearly six inches tall. (Courtesy British Museum.)



a



b



c



d



e

a: Eccentric flint representing a man with elaborate head-dress and blade in his hand. Width, nearly six inches. Copan, about A.D. 750. b: Eccentric flint with profile head at each corner, slightly over one foot high. From beneath a stela dated A.D. 746, at El Palmar, Quintana Roo. c: Flint blade nearly eighteen inches long. From beneath stela dated A.D. 780, at Quirigua. d: Flint dagger, the handle perhaps representing a plumed serpent, nearly nine inches long. From beneath a stela dated A.D. 790, at Quirigua. e: Obsidian axe for ceremonial use, almost one foot high. Base of the haft once covered with pink stucco. About A.D. 950. San José, British Honduras. (Courtesy Chicago Natural History Museum.)



a



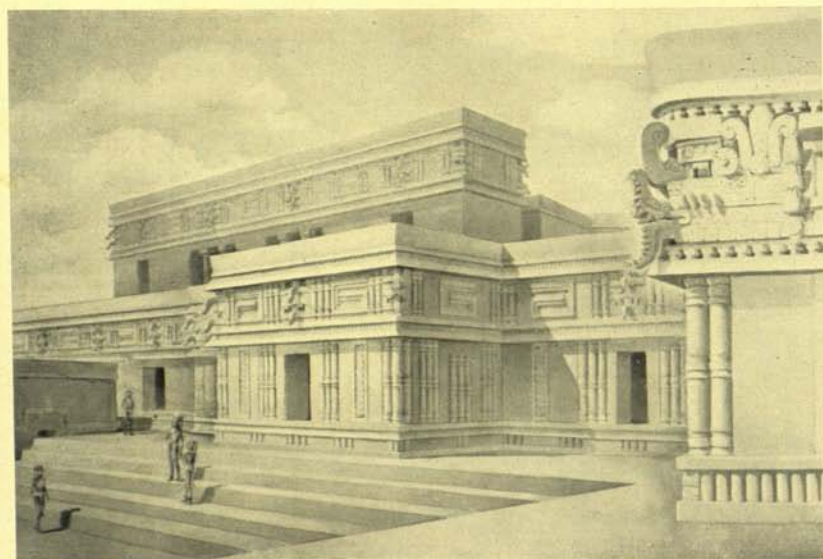
b

Two stucco heads recently found beneath the slab (Plate 13*b*) over the tomb in the secret crypt beneath the Pyramid of the Inscriptions, Palenque. This superb example of Maya modelling dates from about A.D. 690. (*Photographs by Señora Carmen Cook de Leonard.*)

PLATE 23.—Stucco Heads.



a



b

a: Arch at Labna. *b*: Reconstruction of the palace. (Drawing by Tatiana Proskouriakoff.)

concluded. Only the person who had ordered the idols and, therefore, was responsible for bringing food and water to the group was allowed to enter the enclosure. The food was not plentiful, for all participants fasted before and during the period of fabrication. The object of secluding the workers was probably to ensure that they remained continent and to confine the dangers of this work to those who, by fasting and continence, had purified themselves and thereby gained a certain immunity from peril. Incense was constantly burned to the gods of the four world directions, and workers frequently smeared blood drawn from their own bodies on the idols in process of manufacture. When the men were resting, the idols were kept in a large urn, in order, one supposes, to reduce the danger from them, since a belief that idols come to life and wander around harming people exists among the present-day Maya.

When completed, the idols were placed in an arbour erected for that purpose, and the soot with which the participants, as fasters, had smeared themselves, was removed. Following ceremonies of purification and consecration, the idols were wrapped in cloths, placed in a rush hamper, and handed over to the person who had ordered them. Payment was in local currency (cacao, shell beads, etc.) and in gifts of venison and birds. The priest then addressed the idol makers, praising them for their courage in view of the latent dangers had fast or continence been broken. A feast and carousal concluded the ceremony.

The foregoing outline illustrates the Maya conception that the effectiveness of rites depended on the physical purity of all participants. Ritualistic drinking, such as concluded this ceremony, was more than a release from tension; *balche*, the drink of fermented honey, was holy. By drinking it, one drove evil from the body, and the resulting exaltation, physical and spiritual, brought one in closer touch with gods.

The ceremony of purification which followed immediately on the completion of the idols consisted of collecting various objects used in the rites and depositing them outside the village. Thereby evil was safely removed from the group and, presumably, from the new idols, and deposited where it could do no harm. This process was followed in most Maya ceremonies, and I myself have witnessed it at the dedication of a new hut in British Honduras. The slaying of a scapegoat, described below, for the sins of a Quiche town is merely a variation of the same theme.

Success of a ritual depended on the purity not only of the participants but also of all the elements used. The floor had first to be swept and the utensils purified. Water used must be "virgin" water from sources uncontaminated by human touch; children were most acceptable as sacrifices because of their purity; animals sacrificed were theoretically virgin; among the Aztec, and almost certainly among the Maya, too, some physical imperfection disqualified a person as a sacrificial victim. Moreover, the actual ritual had to be followed without deviation. For instance, a Lacandon drummer made a mistake in the beating of a drum at the sacrifice of a human. The ceremony was immediately stopped and the drummer himself came very near being sacrificed for his crime.

The deeply religious attitude of the Maya is well illustrated by the ceremonies still held at Momostenango, in Quiche territory, on the return every 260 days of the feast of 8 Batz (the day 8 Monkey). The Guatemalan ethnologist Antonio Goubaud wrote a magnificent description of this festival on which I have drawn.

All the Indians of Momostenango feel bound to observe this day, and those who are absent return for its celebration. They firmly believe that failure to do so will bring illness or even death.

On the afternoon preceding 8 Batz, the Indians begin to arrive at the church, and by 8 P.M. the interior is completely filled with them, kneeling in prayer in parallel rows, face to face. The murmur of the fervent prayer fills the church and hundreds of candles twinkle on the floor, their flames dimmed by the pale grey smoke of copal incense rising from scores of clay censers. There is an atmosphere of intense spiritual emotion.

At dawn the next morning the Indians go to the pagan altars on high ground about half a mile from the town, and by 9 A.M. a huge crowd has assembled—estimates of attendance vary from 15,00 to 20,000. The altars are mounds up to ten feet high, consisting largely of fragments of pottery which have been offered there. In front of each stands the calendar priest or shaman, and around is gathered the group for whom he is praying.

People approach the calendar priest, give their names, make a payment of a tiny sum of money, and explain for what they want the prayers. The subjects covered are usually forgiveness of sins, gratitude for past blessings, and desire for future well-being, physical, spiritual, moral, and economic. The calendar priest burns a packet of copal incense in the niche in the altar. These

niches, about twenty inches wide by fifteen inches deep, are formed of potsherds, which for this occasion are decorated with pine boughs.

Each ceremony is very long. The calendar priest prays interminably, mentioning to the earth god the most intimate details in the life of the suppliant. Sometimes he offers a little *aguardiente* to the god, and afterwards drinks it himself, for he believes himself closest to the supreme deities when slightly intoxicated.

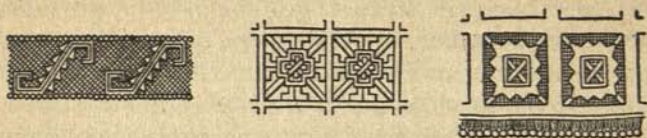
Near by, on secondary altars, the newly initiated shamans pray, but being inexperienced, they are less sought after. Women shamans also have their altars. The rites continue until dusk, when the shamans move to the top of a nearby hill, where they continue praying and burning copal throughout the night. On the two following days prayers continue, and almost all the Indians remain in the town to participate in these further ceremonies.

The two sites for these rituals are called respectively "Little Broom" and "Big Broom". As among the Aztec a broom symbolized forgiveness of sins (it sweeps out the dirt), it is quite likely that these places were thus named because 8 Batz ceremony is essentially an occasion for general confession. That the ceremony is very ancient is demonstrated by the name of the town, for Momostenango means the "place of the altars".

Throughout the Maya area, confession, particularly by a sick person, was customary, for illness was commonly thought to be the result of past sin. Confession might be made to a priest, or, failing him, a son could confess to his parents, or a husband to his wife, or a wife to her husband. Until a few years ago the Ixil Maya, on the northern boundary of the Southern area, had intra-family confession on New Year's Day. In Yucatan, Landa tells us, quarrels often resulted from the confession of a spouse who told all in the expectation of dying, and then lived to face constant upbraiding from his or her matrimonial partner. In the Alta Verapaz a woman named by a confessor as having committed adultery with him was condemned without trial, for certainly no one would lie in the ceremony of confession.

An interesting example of a scapegoat is reported among the Quiche. A very old woman was taken out to a cross-roads outside the town, accompanied by all the local population. The people surrounded her and, all together, confessed their sins in loud voices. When they had finished, a priest drew near and hit the old woman over the head with a stone until she died. The people

then covered her body with a pile of stones and returned home convinced that they and all their neighbours were thereby purified of their sins.



DANCES

Dances were intimately associated with religious ceremonies. The sacrificial victim himself might take part in the dance preliminary to his sacrifice; his relatives and friends also participated. The old dances, because of their pagan context, were prohibited by the friars who introduced in their place dances of Spanish origin which are still performed by the Indians. However, one of the old sacrificial dances survived among the Quiche and Zutuhil for a century after the Spanish Conquest. In a deposition dated 1624 the Spanish priest of the town of Mazatenango describes the dance:

It represents the sacrifice and offering to the devil of an Indian prisoner of war as was done in ancient times, and this the dancers themselves state. There are four men who attack and try to kill a fifth, who is tied to the stake. The four are disguised respectively as a jaguar, a puma, an eagle, and an animal I do not recollect. These animals they say were their familiars. They go through the dance to the accompaniment of yells and of sad and horrible sounds, frightening just to hear, which they make with some long, twisted trumpets, like sackbuts [cf. Plate 17*b*]. When it has been danced in other towns I have seen that when the trumpets are blown, the whole town is filled with excitement, and everyone, including even tiny children, comes rushing and panting to be present.

This dance almost certainly is that which the Aztec performed in honour of Xipe Totec. Four warriors were dressed to represent the military orders of Jaguars and Eagles, and in turn fought a prisoner, tied by a long cord to an altar, whose only defence

was a sword in which plumage replaced the obsidian or flint blades. After he had been slain, the victim's skin was removed and worn by one of the participants.

A dance in Yucatan is thus briefly outlined:

The Indians prepared a float [or litter] and placed on top of it a sort of narrow turret about six feet high and somewhat like a pulpit. This was covered from top to bottom with painted cotton cloths, and two flags were at the top, one on each side. A handsomely dressed Indian, visible from the waist up, was in this tower. He had a rattle of the kind they use in this land in one hand, and a feather fan in the other. All the time he kept shaking his body and whistling to the beating of an upright drum which another Indian, alongside the float, was playing. With him were many other Indians who sang to the same drum, making a great row and giving many piercing whistles. Six Indians carried the float on their shoulders, and even they moved forward singing, dancing, and wiggling their bodies to the sound of the drum. That turret was very handsome, and swayed a great deal, and one could see it from far off because of its height and its bright colours. That dance was called *Zono*, and is one of those they used in ancient times.

Ceremonial dances are painted on the Bonampak murals, and persons on several stelæ are shown in similar attitudes. There is full evidence that in many of the celebrations masked dancers impersonated the gods. Dances to ensure success in hunting and to obtain crops were also performed.

The essentially religious nature of these dances is demonstrated by the fact that the performers first observed a period of continence and fasting, as well as by the fact that dances came to be associated after the Spanish Conquest with church festivals.

Speaking of dances of Spanish origin, Thomas Gage writes: "When I lived among them, it was an ordinary thing for him who in the dance was to act St. Peter or John the Baptist, to come first to confession, saying that they must be holy and pure like that saint whom they represent, and must prepare themselves to die. So likewise he that acted Herod or Herodias, and some of the soldiers that in the dance were to speak and accuse the Saints, would afterwards come to confess of that sin, and desire absolution as from blood-guiltiness."

This quotation illustrates how completely the dancer identified himself with the part he took. That was a natural attitude in a society which had always held dancing to be essentially a religious ritual.

RELIGION AND THE INDIVIDUAL

Every feature of Maya life had its religious aspect, and no important move, whether by the community or by the individual, could be made without consulting the portents. The priests weighed the favourable and unfavourable factors, and announced what days were favourable for such matters as making war, starting to build a temple for the community or a hut for the individual, holding puberty ceremonies, having a communal hunt, starting to clear land, sowing, and harvesting. Public fasts were followed by organized celebrations, and a perpetual round of sacrifices of food, drink, and copal incense kept the gods nourished and satisfied. The individual maintained the same cycle of private worship and sacrifice on a small scale—contenance, fasting, prayer, and offerings of food and incense before and during each crisis of his private life, whether it affected his family life or the agricultural round.

One example of a modern Maya prayer has already been given. I shall close this chapter with two others. The first is a Lacandon chant collected by A. M. Tozzer; the second, a Kekchi prayer recorded by Carl Sapper. It will be seen that all three follow the same pattern. I have been told that such prayers resemble quite closely mediæval Christian prayers, but the similarity must be fortuitous, since the Lacandon have had almost no contact with Christianity.

The Lacandon prayer is offered by a father for his son:

Guard my son, my father. Cause any evil to cease, cause the fever to cease. Do not allow evil to trample him under foot. Do not allow a snake to bite my son. Do not permit my son's death when he is at play. When he is grown up, he will give you an offering of posol. When he is grown, he will give you an offering of tortillas. When he is grown, he will give you an offering of bark bands. When he is grown up he will remember you.

The Kekchi prayer, together with copal incense, is offered

when on a journey to the Tzultacah, the gods of the earth, of the hills and valleys:

Thou, O God, Thou lord of the mountains and valleys. I have given thee a morsel for thee to eat, for thee to drink. Now I pass beneath thy feet, thy hands, I a traveller. It grieves thee not, it troubles thee not to give me all kinds of great and small animals, thou my father. Thou hast many animals—the trogon bird, the pheasant, the wild boar. Show them, therefore, to me. Take them and set them on my path. Then I shall see them, behold them.

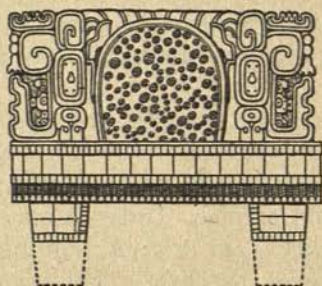
I am beneath thy feet, beneath thy hands. I am fortunate, thou lord of the mountains, thou lord of the valleys. Everything in abundance is possible to thy power, to thy name, to thy being. Of all I may partake. Today, it may be, I was forced to eat my tortillas, yet I am in good hunting lands. It may be that God does not see that there is any living beings here. Perhaps I may bring hither, I may carry back, a small trogon bird.

Now I see, and behold thee my god, thee my mother, thee my father. It is only that of which I speak which I intend. What I have brought you is in truth not much and of little good for thy eating and for thy drinking. Whether it be so or not, what I say and what I think, O God, is that thou art my mother, thou art my father. Now I shall thus sleep beneath thy feet, beneath thy hands, thou lord of the mountains and valley, thou lord of the trees, thou lord of the liana vines. Tomorrow is again day, tomorrow is again light of the sun. I do not know where I shall then be. Who is my mother? Who is my father? Only thou, O God. Thou seest me, thou protectest me on every path, in every time of darkness, from every obstacle which thou mayest hide, which thou mayest remove, thou, O God, thou my lord, thou lord of the mountains and valleys.

It is only that which I say, which I think. Whether it should be more, whether it should be less than I have said. Thou dost tolerate, thou dost forgive my sins.

This prayer seems to summarize the whole attitude of the Maya to the divine powers. The supplicant starts off by calling attention to the offering he has made to them, and then asks, in return, that they should send him game to hunt as he has nothing to eat but his tortillas. As a good Maya he does not ask for more than he needs, for he will be content with one trogon bird (about the

size of a grouse). He acknowledges that he is in the hands of the divine powers who are to him as a father and mother, and who protect him wherever he may be. He makes his act of adoration in the beautiful expression, "I am beneath thy hands, beneath thy feet", and in conclusion, renders thanks that his sins have been forgiven him.



VII. Maya Civilization in Retrospect



There is a spirit in man and the inspiration of the Almighty giveth them understanding.—Job 32:8.

DEVELOPMENT

WHY CULTURES follow certain paths is a highly speculative subject about which very little is known. Opinions differ on the motivations of well-studied civilizations of the past, even when the written observations of their contemporaries are at hand to guide modern judgment. How much more must they be at variance when the little-known Maya civilization is the subject of discussion. In these final pages I give an opinion on what caused Maya culture to develop in the unique way it did and what caused it to decline. It is an attempt to guess the acrostic with more than half the lines unsolved, and so I may easily find myself holding a very different view a few years hence, for each year new discoveries fill gaps in our knowledge of the past.

I have known Jacinto Cunil, a Maya of Socotz, in western British Honduras, for twenty-five years, and our friendship has been cemented by godparenthood, which to the Maya is a peculiarly intimate relationship. I have come to respect him and love him, for he is kindly and upright, loyal, and the old-fashioned kind who believes in doing an honest day's work for his wages. Jacinto's life and character seem an epitome of the whole Maya philosophy of life.

Socotz, like most villages on the edge of the Peten forest, is a recruiting ground for *chicleros*. The chicle contractors pay big wages, and those they sign up to spend the rainy season bleeding gum in the forest get large advance payments. For a week or so

after these advances have been made, money flows freely in the little towns and villages. Most of it is spent on drink and shoddy store goods—silk scarfs of gaudy colours that will run the first time they are exposed to a shower, boots that are more cardboard than leather, and so on. When the splurge is over, the *chicleros* start for the forest camps to work off their indebtedness.

Jacinto will have none of that; for him a man's life should revolve around his milpa. For most of the year he works on the road for considerably less than a *chiclero* earns in a good season. He quits when the dry season comes in order to clear his land, as his ancestors have done for several thousand years; a full crib of corn means more to him than all the trash in the stores of nearby Benque Viejo. Most evenings he visits round the village, where he is liked and respected (several times he has been asked to serve as "mayor"). The orderly routine of the village clearly appeals more to him than the squalor and shiftlessness of get-rich-quick chicle camps. At the hour of the Angelus his children come to him for his benediction. That, of course, is not an old pagan custom, but it is in the Maya traditions of religion in everyday life and respect for parents. Most lowland Maya are light-hearted and seem to enjoy life—well adjusted, as the current expression puts it. Jacinto, perhaps, takes life a little more seriously, but essentially he, too, is a happy man.

On archæological trips Jacinto keeps an eye open for the hives of wild bees. Honey is a treat for any Maya, but, more important, the hives yield wax. Jacinto strains the black wax and takes it home at the end of the season to use in his private intercessions, for candles of black beeswax are more efficacious than store candles in religious rites. Jacinto is a keen hunter. If game is plentiful, he smoke-dries the surplus. As soon as he has as much as he can carry home, he stops hunting, for he does not kill for sport, and more than once I have heard him condemn *chicleros* who kill more game than they can use.

I know the names of only a few trees and plants and manage to get those few mixed; I walk close to a beehive and cannot see it; I frighten game away as I blunder noisily through the forest behind Jacinto; I lose a trail marked so clearly that any fool except a gringo can see it; and I cannot even put a good edge on a machete blade. Jacinto is very patient with me; as an individualist, he accepts the idea that it takes all kinds to make a world.

In short, Jacinto has those qualities which, I believe, made his

forebears what they were; and, incidentally, he lacks that failing—drunkenness (controlled in pre-Columbian times)—which characterizes the present-day Maya. Pondering whether my attitude toward the Maya, past and present, might be too sentimental and idealistic, I turned to the writings of Karl Sapper, German geographer and ethnologist, who lived for several years on very intimate terms with the Kekchi-Maya of the Alta Verapaz, and to the judgment of Alfred Tozzer, who has lived among the Lacandon.

Sapper says of the Kekchi that by family training and racial custom they seek to instil control of every kind of mental excitement, to teach moderation in all actions, and to inculcate subordination to superiors. He comments that the quick gestures and loud speech of most Europeans and North Americans are evidence to the Indian of deficiencies in our training and of the low status of our civilization. As a testimony to Kekchi honesty he notes that in his twelve years of residence among them nothing of his was stolen (my experience has been the same). Endurance, he believes, is the form of energy most esteemed by the Indian.

Tozzer writes of the Lacandon that their morals are good and their family life happy, seldom disturbed by discord or strife. He notes that they view with disgust the loose morals and infidelity of the whites and *ladinos* with whom they come in contact, and that generally they are truthful, honest, generous, hospitable, and mild.

Tozzer, unlike Sapper, does not specifically mention the two characteristics which I believe to have had most influence on Maya culture—moderation in all things and the attitude of live and let live—but their presence can be deduced from the whole tenor of his report. Each writer emphasizes the deeply religious character of the Maya group he studied. These judgments on Maya character reassure me that my assessment is not unduly idealistic or influenced by sentimentality.

The general character and religious devotion of the Maya in pre-Columbian times were surely the same as today, and, I believe, they largely decided the path Maya culture followed. Devoutness, discipline, and respect for authority would have facilitated the emergence of a theocracy, and as long as the priestly caste met the spiritual needs of the rank and file, there would, I believe, have been little opposition, overt or covert, to it. The hierarchic group had a vital function in Maya society, that of intermediary between the gods and man. The priests were able to relieve, season by

season, the loving anxiety with which the Maya peasant brooded over his soil and his crops, and, remote in the mysterious, dark rooms of their lofty temples, they gave expression to the deep mysticism with which that relationship was impregnated. The priests alone comprehended the orderliness of the universe, for they alone understood the influences emanating from the regnant gods of the innumerable cycles of time. They only, with their assessments of malignant and benevolent aspects, could help the crops by choosing favourable days for every stage in the farmer's year.

This doctrine of orderly predestination had a profound effect on Maya life; it could hardly have arisen had not the Maya been an orderly people, for the Maya made their gods in their own image and conceived a universe suitably regulated to their existence.

Yet, the Maya, with his deeply religious spirit, surely was not satisfied with cut-and-dried formulæ for ensuring good crops. His emotionalism called for more than the passive role of following instructions as to days favourable or unfavourable to his sundry undertakings; it demanded the spiritual comfort of sacrifice. Here, again, the priest group could comply, and at the same time strengthen its hold on the people. Endurance and honest labour are virtues of which the Maya now, and presumably then, are proud. The perpetual building of religious structures and the endless enlargement of existing nuclei in the ceremonial centre gave the people the opportunity to offer to the gods the oblation of their labour and endurance, and—perhaps more important—gave them the feeling of participation, without which no religion can endure. To the devout such labours were acts of devotion to the loved gods of the soil; to the less mystical they were insurance for full corn bins. The priestly group seems to have been well aware of the value of meeting psychological needs by combining mystery and detachment with group participation. The rites inside the narrow, dark temples were for the few; the figures of the rain gods, with their ophidian or reptilian guises, and the portraits of the youthful maize god, visible from afar on the façades of the buildings, were for the common people.

Maya art of the Classic Period surely reflects spiritual adjustment in its serenity and beauty. The stelæ in the impersonality of their subject matter and in their hieroglyphic texts reveal another Maya characteristic, an aspect of their desire for moderation in

all things, suppression of the individual. These texts, to the best of our knowledge, contain no glorification of ruler or recital of conquest, such as are customary on the monuments of other peoples. Instead, they are an impersonal record of steps in the search for truth, as the Maya saw it, that is the whole philosophy of time with its interlocking cycles of divine influences.

I have tried to show the Maya as one of several coeval cultures in Middle America, each of which reacted on the other. I would suppose that the three great characteristics of Maya temperament—devoutness, moderation, and discipline—were shared by the makers of the other great cultures—Teotihuacan, La Venta, Monte Alban, and Tajin—and for that reason their similarities far outweigh their differences. However, in none of these centres did architecture or science approach the Maya level, and in at least two (Teotihuacan and Monte Alban) artistic achievement was far behind the Maya.

Archæology perhaps yields the explanation for this disparity. At Teotihuacan and Monte Alban (and later at Tula) there are many rooms built around small patios, and they are almost certainly residential. At Teotihuacan these residential buildings far outnumber religious structures. Nothing comparable has been found in Maya cities of the Classic Period. In the present state of our knowledge it would be dangerous to assert that no buildings in Maya ceremonial centres are residential, yet we can be reasonably certain that no early Maya city of the lowlands had such a high proportion of residential buildings as Teotihuacan (I have supposed that there were no permanent residents within the actual limits of a ceremonial centre). It is, perhaps, a fair deduction that at Teotihuacan, and probably at Monte Alban, too, secular influences (not necessarily militaristic, for the worship of rain gods is depicted constantly at both sites) challenged religious domination in relatively early times and undermined the singular devoutness which carried the Maya to their intellectual and artistic peaks. A contributing factor may have been Teotihuacan's geographical position, for on the frontier of civilization there can have been little tranquillity under the constant threat of attack by uncivilized tribes.

DECLINE

The attacks of uncivilized tribes in the remote north were, I believe, the indirect cause of the eclipse of Maya civilization, its gradual decline, and final collapse. Central Mexico, like the northern frontier of the Roman Empire, was exposed to the incursions of barbarians from the north (the Aztec was one of the later groups to arrive), and its peoples in self-defence had to accept a militaristic orientation of their culture. The transformation of the sun/god into a war god was perhaps the first step. With the growth of a warrior class comes the theory that the sun needs human flesh to give him strength each morning, and with it develops the heresy that war is not solely a matter of defence, but is primarily to obtain food for the sun and, concomitantly, for the glorification of the warrior caste. Teotihuacan, more interested in rain gods than deified warriors, was an early victim. Tula, which rose after the fall of Teotihuacan but surely before the end of the Maya Classic Period, was aggressively militaristic despite the pacific teachings of its patron, Quetzalcoatl. The new cult of war, we must suppose, spread southward like a blight, destroying or transforming the older and gentler cultural growths in its path.

Pressure of these new ideas or even of invaders affected the highlands of Guatemala, Campeche, and Yucatan before they reached the heart of the Maya lowlands. Indeed, actual contacts between the outside world and that nucleus of Maya culture may have been almost nil, but indirect influences from outside may have had a decisive effect on the Maya theocratic society. The ruling group appears to have adopted some of the new religious cults and practices which had developed in the north, and it is possible that the masses were alienated by these innovations and the consequent relegation of their loved gods of the soil to secondary places. It is reasonable to suppose that they would not have laboured willingly to build to the glory of gods in whom they were not interested, especially if they associated those religious innovations with a developing interest by their leaders in war. Perhaps the priests, increasingly absorbed in their theories of the philosophy of time, began to lose the allegiance of the masses before foreign influences widened the gap. In either case the proletariat would have questioned whether the hierarchy any longer

acted wholeheartedly for the common welfare. Once that doubt had gained a hold, the old order was doomed.

In the Central area the collapse came slowly, first to one city, then to another. If the above outline of what happened is correct—one must realize that it is a theory deduced from a minimum of fact—the overthrow of the old order may have been achieved by passive resistance or by the slaughter of the ruling caste (the Maya is slow to anger, but once aroused is implacable). Certainly it was final, for the Maya peasant, bereft of the hierarchy, never developed another civilization or rebuilt the old. Culture remained on a low level until the coming of the Spaniards, perhaps because revitalizing influences from outside failed to make themselves felt in those isolated regions.

In Yucatan and the Guatemalan highlands the situation was different, for in those areas foreigners from Mexico established themselves as new ruling castes and, by their introduction of militarism and the sacrificial sun cult, forced the native Maya reluctantly to follow suit. Rival factions fought for control, and central government was finally imposed by the most powerful group in each area—Mayapan in Yucatan, the Quiche in the Guatemalan highlands. Those new rulers claimed to be of Toltec descent.

Such Mexican features as the worship of Quetzalcoatl and Tezcatlipoca and the sun cult, as well as the warriors' orders that maintained them, lost ground in the final centuries before the Spaniards arrived; the ruling class was no longer Mexican in speech when the end came.

In the fifteenth century the two incipient empires of Mayapan and Uatlan, seat of the Quiche, were overthrown. The two dominions disintegrated into numerous petty states constantly at one another's throat, effectively destroying any hope for a Maya renaissance.

The lack of stability and the submergence of old values in the centuries after the close of the Classic Period are reflected in the decadence of the arts. Sculpture, architecture, and ceramics degenerated, sinking with each change for the worse in political and religious life to the pitiable level which the Spaniards encountered.

The course Maya culture took in the centuries of the Classic Period has few, if any, close parallels in history. Perhaps the nearest to it is the Jesuit mission state in sixteenth- and seventeenth-century Paraguay. Both were hierarchic and pacific, and

each fell because of warfare from without (direct impact in Paraguay; probably indirect in the Maya area), but there is one vital difference. In Paraguay, European religion and culture were imposed by a European hierarchy on the Guaraní natives; in the Maya area the growth was largely or (in the eyes of orthodox anthropologists) entirely native.

The later stages of Maya history—warfare, the universal state, tyranny, and fission—form a sequence which appears over and over again in history, as Arnold Toynbee has demonstrated.

In the Classic Period, Maya character, free to work out its own salvation, produced a unique and fascinating culture; in the later periods it was weakened by the impact of alien attitudes in conflict with its ideals. Immoderation swamped moderation to produce a stereotype culture not differing markedly in its dull history from a dozen others. Yet one sees in the writings in the Books of Chilam Balam and in the character of the present-day Maya that below the surface the old attitudes survived. Captive Greece conquered Rome. Through the anguish of the last century of pre-Columbian history one can detect signs of a re-emergence of Maya attitudes, and had the discovery of the New World been postponed a century or two, Maya culture might have bloomed again, perhaps in another soil. Without much doubt the Aztec would have conquered the Maya, but then history might have repeated itself, for the Maya were to the Aztec as Greece was to Rome.

Maya civilization, I believe, was the product of Maya character, but there was another essential ingredient—a creative minority with the imagination and mental energy to start Maya lowland civilization on its course and keep it on that course for several hundred years.

That ruling group might have been indigenous or it might have come from anywhere in the highlands between central Mexico and El Savador, for, as we have seen, all that vast region was at the same cultural level during the Formative Period. The important point is that the lowland Maya in their harsh setting of tropical rain forest outstripped their neighbours dwelling in highland and plateau country where conditions were so much more favourable.

The great civilizations of the world—of Egypt, Mesopotamia, the Indies, and China—developed in hot climates, but in lands that were fairly open, for the most part in the valleys of great rivers. Civilizations, such as those of Cambodia and Java, which have existed in tropical forest, were introduced already fully de-

veloped and did not long endure. Maya lowland civilization (perhaps La Venta, too) is, so far as I know, alone in having developed and reached maturity in thickly forested tropics.

Arnold Toynbee has pointed out that civilization responds to challenge, but if that challenge is too great, the civilization is abortive. I cannot imagine a more formidable antagonist than those endless miles of jungle and forest, a Goliath which the Maya David faced with torch and stone axe. Worse still, this was a Goliath who could not be slain outright. Driven back, he recaptured lost ground as soon as David's back was turned.

Perpetual warfare to keep the forest at bay with inadequate tools should by all the laws of the Medes and Persians have been too great a price to pay for civilization. Undoubtedly it would have been to the Medes and Persians; for some reason it was not to the Maya. Perhaps the reason was that blood brothers of Jacinto Cunil, not Medes and Persians, formed the backbone of Maya civilization.



Synopsis of Maya History

FORMATIVE PERIOD:

500 B.C. (??)—*circa* A.D. 325

RISE OF agricultural civilizations on approximately the same cultural level and with essentially the same religion throughout Middle America. Period divisible into several phases. Pyramids built and hierarchy probably starting to emerge. Good plain pottery and figurine cult. Elementary hieroglyphic writing and simpler components of calendar. Strong development on Pacific Coast and in Guatemalan highlands. Maya lowland situation less clear, but at end of period the lowland Maya of the Peten and Yucatan were erecting pyramids. Their sculpture was still largely influenced by the early styles they had shared with their non-Maya neighbours.

CLASSIC PERIOD:

circa A.D. 325-925

Early (A.D. 325-625). Corbelled vaulting and typical Maya architecture appear at start of period, as does the stela cult. Two centuries later, many cities (Tikal, Uaxactun, Copan, Piedras Negras, Yaxchilan, etc.) are erecting hieroglyphic monuments. Maya art develops its characteristic features, freeing itself of archaisms of the Formative Period. Cultural peak at Kaminaljuyu and other highland Maya cities (at Teotihuacan also). Toward close of phase a period of quiescence in lowlands.

Florescence (A.D. 625-800). Greatest era of sculpture, hieroglyphic writing, and building for the lowland Maya. Finest painted pottery, superb mould-made figurines, and best lapidary work. Great progress in astronomy and advanced arithmetic. Great expansion in number of ceremonial centres and of stelæ (nineteen cities are known to have dedicated hieroglyphic monuments in A.D. 790). Marked decline in Guatemalan highlands.

Collapse (A.D. 800-925). One by one ceremonial centres of Central area abandoned, possibly because of revolt against hierarchy, perhaps an indirect result of chain reaction to barbarian

pressure north of Mexico City. Mexican influences infiltrate west side of Peninsula of Yucatan, and affect some Puuc cities, many of which are abandoned at end of period or shortly afterwards.

INTERREGNUM:

A.D. 925-975

In Central area a return to cultural level approximating that of the Formative Period, probably with the village or group of villages as the political unit. Occasional visits to abandoned ceremonial centres for simple rites and burials of petty chiefs. Waxing Mexican influence in Yucatan. First appearance of metal and plumbate pottery.

MEXICAN PERIOD:

A.D. 975-1200

Itza established themselves at Chichen Itza, introducing art and some architectural features of Tula, the worship of Quetzalcoatl and other Mexican gods, and warfare to obtain flesh and blood to sustain the sun. Itza said to have conquered other cities, but archæological picture for rest of Yucatan not clear. Rise of secular power at cost of priesthood. Showy architecture and art much inferior to that of Classic Period. Metal, plumbate, and turquoise important features. Fall of Chichen Itza at end of period.

PERIOD OF MEXICAN ABSORPTION:

A.D. 1200-1540

Mayapan establishes "empire" in Yucatan, and the Quiche do the same in Guatemalan highlands. Central rule and tyranny. Ruling groups gradually shed their Mexican culture (except warfare), becoming Maya in speech and religion. Worship of Quetzalcoatl and other Mexican gods declines. Secularization of culture continues. Ceremonial centres become real cities. Architecture and the arts sink to new lows. Following revolts against Mayapan and the Quiche in the fifteenth century, small independent chieftainships established with perpetual warring among themselves. Cultural decline continues until Maya civilization ended by Spanish Conquest of Guatemala in 1525, and of Yucatan in 1541. Itza in remote Tayasal remain independent until 1697.

Selected Reading

Published material on the Maya is very extensive, but much of it is technical. Many of the titles listed below are not readily obtainable, but can be consulted in good public libraries. Those dealing with specific ruins have been chosen partly because they well illustrate architecture, sculpture, and the minor arts. All the titles under the heading "General and History" contain extensive bibliographies.

The following abbreviations are used:

C.I.W. Pub.: Carnegie Institution of Washington *Publication*

P.M.M.: Peabody Museum of Archaeology and Ethnology, Harvard University, *Memoirs*

P.M.P.: Peabody Museum of Archaeology and Ethnology, Harvard University, *Papers*

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