The ancient Maya ruins of Guatemala and Yucatán have held a fascination for layman and scholar alike ever since the Spanish conquest of the area. There exist several early documents which contain accounts in Spanish of the daily life of the post-Conquest Maya as seen by their conquerors, as well as descriptions and speculations pertaining to the more ancient ruins. In more recent times, both travelers and archaeologists have added to our store of information about the ancient Maya. In this work, however, interest has tended to concentrate on the grandest, most spectacular ruins; that is, the great sites with tall temples, complex palace groups, and magnificent carved monuments.

The end result of this interest has been the accumulation of considerable knowledge of the art, architecture, and ceremonial life of the pre-Conquest Maya. On the other hand, knowledge pertaining to the day-to-day life of the bulk of the Maya population, who made possible such great achievements, is scanty. This gap in our knowledge is particularly critical for the Classic Period (A.D. 300-900), when Maya civilization was in full flower. We do not know, for example, the nature of the communities represented by the great Classic sites, such as Tikal. On this score, investigators have entertained various notions. Some hold that such sites were nearly empty ceremonial centers, visited only at certain times of year by an essentially rural population, to witness great public ceremonies. At the opposite extreme, other students feel that these sites were true cities, with large populations engaged in specialized activities, supported by a rural farming population. Between these two poles may be found every shade of opinion.

When the University Museum undertook the investigation of Tikal in 1956, it was decided that excavation of the ceremonial precincts was not enough. Rather, knowledge of the great accomplishments of the Tikal Maya should be broadened by knowledge of the population that made these possible. Accordingly, a six-year program was inaugurated in 1959. This was devoted to the excavation of various small structures located throughout the site at varying distances from the center. There were four objectives, the first to estimate the size of the population living at Tikal, the second to seek information pertaining to daily subsistence, the third to learn the nature of the social structure of Tikal. Finally, it was hoped that analysis of household remains would show whether or not a great social gulf separated the bulk of the population from those directly responsible for ceremonial activities at Tikal. Stated more generally, the overall aim was to translate archaeological information into a dynamic picture of people with defined status and function with relation to the community in which they lived.

Tikal, the largest of the Classic Maya ruins, is located in the rain forests of Guatemala's Department of El Petén. Three and a half square miles (nine square kilometers) of the site have been mapped in detail, but reconnaissance methods bring the total to 8.2 square miles (20 square kilometers). In this area, about three thousand structures have been located. These range from giant temples and "palaces" to small platforms of ruins which are barely visible on the surface. The smaller structures account for the bulk of construction, as only some three hundred or so structures may be placed in the category of major "palaces," temples, or ball courts. It is with these smaller structures that we are concerned here, for these include those structures most likely to have been houses.
In order to learn just what these small structures were, we have excavated a total of 117 to date. Forty-five of these were located, at varying distances, in strip running a maximum of 1.2 miles northeast from the Great Plaza. Thirty-three others were clustered almost a mile east of the Great Plaza. The remaining structures were distributed throughout all sections of the central portion of the site. Thirteen structures in a single group were excavated completely to bedrock. The others were tested by a procedure which included a trench to bedrock through the axis to reveal any sequence of earlier construction. Supplementary trenches revealed the final form taken by the structure, and permitted the collection of samples of cultural debris. In many instances, excavations were extended to clarify matters of plan, to secure additional debris, or to investigate earlier buried construction. This is in marked contrast with the more usual practice in the Maya area of simply assuming that all small mounds represent houses, or at most, digging test pits either alongside small mounds or through the tops of them. There is good reason to believe that such procedures lead to less reliable conclusions.

The problems connected with excavation were great. Since the structures were so small, they have all been severely damaged by jungle growth. In many instances, roots have penetrated walls and floors, heaving the former out of position and often completely destroying the latter. Construction fill has spilled out of platforms making it difficult to separate this building material from trash accumulated during occupation. Postholes were completely unidentifiable unless they happened to penetrate bedrock. In many cases, the configuration of the covering mound gave no clue to the specific form of the underlying structure. As a result, one could not always be sure beforehand how much time would be required to excavate a given buried structure. Plaza floors have long since disintegrated, except where protected by the collapse of bordering structures. Therefore, contemporaneity of structures generally could not be established by architectural ties, but had to be established largely on the basis of ceramic analysis and physical fits between broken artifacts.

We have provisionally identified all but 25 of our sample of 117 small structures as houses. These houses showed an unexpected diversity of architecture. The simplest were square platforms, with masonry walls retaining earth-and-rubble fill, and surfaced by a plaster floor. Others were rectangular platforms which supported two or three smaller platform levels. Evidence of postholes indicates that all these platforms supported buildings of pole-and-thatch, in all very similar to modern Maya houses. In some cases, small platforms were attached to the rectangular ends or bucks of such structures. In one instance, a low masonry wall separated two rooms within a structure. Somewhat more complex were several small buildings with masonry walls of the "palace" type, usually with a single range of rooms and interior platforms of masonry. Such platforms could have served as beds. All had ceramic inserts in the walls near the doorways, apparently to hold curtains. In some, the masonry walls were low and must have terminated in an upper zone of poles. Others had vaulted masonry roofs. While these latter entirely masonry buildings do not so much resemble modern Maya houses, structures of similar complexity at the late Post-Classic (A.D. 1200-1450) site of Mayapán in Yucatan served as residences of the elite. At Tikal, they seem to mark one end of an architectural continuum ranging from the simplest structures, through those based on multi-leveled platforms and "palaces" partially constructed of pole-and-thatch.

Associated with all presumed house groups were burials far less elaborate than those found in the importantly located graves or "tombs" of the Great Plaza—North Acropolis area. Variations in terms of location, orientation, position, type of grave, and type of grave offering suggest a domestic association. The pottery vessels found in these graves often show evidence of prior use. Occasional household trash deposits have been located, filled with bits of broken pots, and implements. In the case of pottery vessels, decorated ware is less common than in refuse near the Great Plaza, while utilitarian jars and bowls are more common. Clay whistles, in the form of figures, are frequently found in household trash. Even the clay vessels from which the inhabitants made figurines have been found. Today, similar figurines are used by the Maya in Yucatan in connection with various festivities. The paucity of bone fragments in such middens presents a problem. Since the ancient Maya had domestic dogs, perhaps these scavenged discarded bones. Or perhaps meat was not important in the diet. Often the Maya seem to have hauled away their trash to use as construction fill. But in the many instances where we do not find extensive trash heaps in association with houses, we do find obviously utilitarian debris strewn around on living surfaces. We do not find cached offerings, altars, or stelae, nor do we find ceremonial objects in any numbers around our presumed dwellings, which further sets them apart from ceremonial buildings.

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Of the 25 remaining small structures, some appear to have been kitchens. These were usually too small to have been lived in. In one instance, we actually found a broken metate on the floor, as well as quantities of ash and charcoal lying around. Of course, identification of a kitchen is a good indication that the associated structures were, in fact, houses.

Some apparently domestic groups included their own small temple or shrine. These are identified by their location on the east side of a plaza, their square shape, and the presence of one or more burials placed just prior to new construction. In contrast to these domestic enclosures, these “dedicatory” burials are always located on the axis, in a specially constructed grave, with body extended, head to the north, and pottery vessels of reasonable quality included.

Another feature of probable domestic groups is the presence of one or more chultuns. These are subterranean constructions with one or more chambers built into a mound, and entered from above through openings reminiscent of modern manholes. Chultuns are not usually associated with non-residential architecture. Their possible function is discussed by Dennis Puleston in the following article, The Chultuns of Tikal.

Various inferences emerge from our data. The general arrangement of houses and associated buildings around a level court suggests an analogy with modern Maya practice, where similar units are occupied by multiple families in which married couples of two or more generations are related through the male line. Generally, one structure in each group stands apart from the others in terms of size, as well as quality of contemporary pottery and artifacts strewn on living surfaces. In those groups with special family temples, the greater number of burials, and invariably the richer burials, were in or near this house. Such houses perhaps housed the senior family of the group.

In three cases we noted clusters of several of these living-place units, each cluster associated with a possible ceremonial structure. The latter, of either temple or “palace” type, is marked by the presence of a cached offering, and perhaps burials placed immediately prior to construction above. We may infer from this that members of some lineage groups may have tended to live in proximity, but this was not a usual feature of the Tikal settlement pattern.

If we employ the results of excavation to interpret the map of Tikal, a population estimate becomes feasible. To make this estimate, three variables must be controlled. These are the accuracy of the map, the contemporaneity of mapped features, and the function of these features. We now know that the site map is only an approximate representation of the site well along in Late Classic times. For our excavated sample, a total of 111 features designated as small structures were investigated, but four of these actually were not ruins at all. Ten more were discovered in the course of excavation. Although the change in overall numbers is a net change of only six structures, it is obvious that the elimination of four features in the present sample and the addition of ten others cause significant change in the composition of some groups as depicted on the map.

As regards the second variable, eleven structures in our excavated sample were in use earlier than the others, which means that only 106 out of 117 structures can be considered contemporaneous. Five structures (only three of which appeared on the site map) were in use early in Late Classic times. The other six of Pre-Classical times were in use much earlier, and did not even appear on the map. Both site structure excavation and the ceramic series indicate that all small structures depicted on the map of Tikal had a Late Classic or earlier occupation, but not necessarily all of these were contemporary. Nonetheless, it is unlikely that any Early Classic and Pre-Classical structures are to be found on the site map to upset any population estimate for Late Classic times.

In regard to the third variable, we now have a fair idea of the proportion of the excavated small structures which were in fact houses. However, we must eliminate from this sample six groups, in which only eight small ceremonial structures were studied, out of a much larger total of structures. If included in our reckoning these eight would weight the sample in favor of ceremonial structures as against houses and other domestically related buildings. Therefore, in terms of our adjusted simple, seventeen structures must be considered as residential units but essentially non-residential (kitchens, family temples, and so forth).

These figures may now be applied to the site map in terms of percentages. Approximately 2,120 structures are included in the 3.5 square miles mapped in detail. If we arbitrarily eliminate the obviously ceremonial buildings of the major groups of Tikal, such as the great temples, and also eliminate the major groups of associated “palaces” and small courts, this leaves about 1,800 structures to deal with. We have seen that 106 of 117 structures were in use at one time. However, six early structures may be dropped from the total, for, as we have stated, such structures do not appear on the site map and they cancel out the net gain of six structures over the 111 which were actually mapped. This means that 95.5%, or 1,730 of the 1,800 mapped structures were in use well along in Late Classic times, say from A.D. 600 to 900. Not only do we have to explain why only ceremonial structures were investigated, but as we have stated, 17 of the remaining excavated structures have been judged to be kitchens, family temples, and otherwise not houses, and these must also be excluded. Projecting this consideration to the site map, it follows that 16.5% or 285 structures were not houses. This leaves 1,445 houses. If we allow 5.6 occupants per house on the basis of present day household statistics for Yucatan, this gives a population of about 8,092 for the central 3.5 square miles of Tikal alone.

If we now include data for the surrounding mapped 2.7 square miles, 503 more structures out of a total of 630 must be added to the total of probable houses. Thus the population total would rise to 10,809 for the 6.2 square miles (not all of which was habitable). The outer perimeter was mapped by reconnaissance methods and not plane-table survey, and is known to be less thoroughly explored than the central 3.5 square miles. There is little question that an accurate survey of this peripheral area would reveal more mounds, particularly to the north and south. Moreover, it is also clear from recent reconnaissance that the north and south limits of the site fall well beyond the limits of the site map. Therefore, the figure of 10,809 persons should be considered as a minimum estimate, with the probability that the population was actually greater. If we allow the abundant major “palace” structures to have been also houses (a very likely but as yet unproved possibility) we would have to

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Isometric rendering of a small "palace" (Structure 4E-31). This particular building seems to have served a special function for a lineage group. Beneath it were five contemporary burials, suggestive of human sacrifice, and a cached offering. Other "palaces," virtually identical in plan but lacking burials and caches, appear to have been lived in. We would expect occupants of such structures to have had a higher social status than those living in simple pole-and-thatch buildings.

Isometric rendering of a typical two-level building platform (Structure 3F-25).

Isometric rendering of Structure 6E-9a, a Pre-Classic structure (about 200 B.C.). To date, about seven Pre-Classic structures thought to be houses have been investigated at Tikal. While this is a small sample, variation of the same sort noted for Late Classic houses indicates a complex social pattern even at this early time. This platform, which probably supported a pole-and-thatch building, may be contrasted with low platforms of irregular construction.

Plan of Group 4F-3, a typical layout of houses (including Structures 4F-21, -47, -48, -49). Here, two square kivas are located off ends of the two houses. Often, houses were placed on all four sides of a plaza, or a family temple may be situated on the eastern side.

raise this figure very much more. At the present time, an extensive program of "palace" excavation by Peter D. Harrison ought to determine whether or not these structures were residences of the elite. But disregarding this possibility, and since our population figure is only a rough estimate, we round it off to 10,000-11,000. This, then, is a minimal estimate of inhabitants in Late Classic times, say around A.D. 800, for the mapped portion of Tikal.

Consistent with a large population, we might expect to find a complex social structure. In fact, the tremendous richness, diversity, and virtuosity of Maya technology are most likely the products of full-time occupational specialists. Skilled artisans seem necessary to account for the technology; clerks, bureaucrats, and architects for the intense building activity. Evidence of astronomical knowledge calls for the existence of scholars. Evidence of trade in non-perishable items is clear at Tikal. Various stones, including granite and obsidian, were imported to make certain imple-

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Burials seem to vary according to the importance of the deceased, the wealth of the surviving relatives, and their means to provide a good burial. The artifacts add to the theme of variability. In general, abundance and variety of artifacts tend to increase in groups of larger structures, decrease in groups of smaller structures. From this we can reasonably infer that there was a social continuum with a considerable range between the rich and poor. Lack of evidence of clearly defined castes, with the exception of the ruling elite, suggests considerable social mobility. This is just what we might expect in a large population which included economic specialists of one sort or another. It is similar to the situation in present-day Indian society in Mesoamerica, which lacks formally recognized social classes but which recognizes differential prestige based on wealth, power, and personal achievement.

We have not found evidence of the program of small structure investigation within the presently mapped portion of Tikal, and we have here outlined the essential framework of the Tikal pattern of settlement. Continuing investigation of major "palace"-type structures should provide further clarification. Now, several major problems lie beyond the limits of the site map. One of prime importance is the problem of food supply. There is no doubt that the Maya were dependent on a system of slash-and-burn agriculture. Recent calculations suggest that in the medium rain-forested Peten, one man, with some assistance from his family, could supply corn for about 12 people, freeing half the population for other kinds of activity. Theoretically, a population of 100-200 persons per square mile could be supported. If the population of Tikal was largely non-farming, this would require a sustaining population more sparsely settled on the land around Tikal for considerable distances, with perhaps local centers of population for administrative and ceremonial functions. We know that there is ample room in the Peten for such a Tikal sustaining area, without including any major sites within it. Minor sites such as Loltunam, Chikin Tikal, and El Encanto would represent socio-political satellites of Tikal. We hope to pursue a program in 1965 directed toward an understanding of the sustaining area. This would include mapping over wide areas, as well as excavation to determine the degree and nature of interdependence of sites throughout the area around Tikal.

The Tikal data is most important for lowland Maya archaeology in general. Tikal unquestionably had a higher and denser population than Uaxactun to the north, or the Belize River Valley to the east in Late Classic times. On the other hand, from briefly published data, Dzibilchaltun in northern Yucatan near the city of Merida seems to have been as heavily populated in Late Classic times as Tikal. There is therefore no reason to insist that a single pattern of settlement holds true for all the sites of the lowland Maya. In the past, students have not generally recognized this. Yet, to recognize it opens the possibility of a type of socio-political organization hitherto observed only for Post-Classic Yucatan: the large population center, dependent on, and in control of, a large rural sustaining area, such as is seen at Mayapan with its large area of control.

A second point pertains directly to the Yucatecan Post-Classic site of Mayapan, which had a denser population by far than Tikal, though the total numbers were about the same. Traditionally, the settlement pattern at Mayapan is explained as the result of heavy Mexican influence. While we do not disclaim this influence, it now seems that the trend to compact population centers was a feature of some Late Classic Maya sites, and that Mayapan was a local culmination of this trend. In fact, Mayapan may be described as a compressed version of Tikal. It does not have a gridiron layout evident in certain urban Mexican sites. It would appear that the Mexican influence, perhaps in the guise of an increased emphasis on militarism, merely accelerated an already deeply rooted tradition.

The problem of whether or not Tikal may be thought of as a city is an open one at this juncture. The large population seems to have been more densely settled than the population of the surrounding countryside, so far as we can now determine. The site itself was a ceremonial, manufacturing, and trading center. With this it constitutes a city in the matter of definition. Many students balk at the scattered distribution of house groups at Tikal, which certainly differs from the more congested grid pattern of some Mexican sites. If congested, gridled living is a necessary criterion of "city." Then Tikal was not a community of this type, despite the probability that in both cases the populations were functionally, if not socially, diversified. On the other hand, a simple distinction between city and non-city obscures the unique character of Tikal, which may not have been comparable to a Teotihuacan or a Tenochtitlan in Central Mexico, but it certainly should not be lumped together with a Barton Ramie, or a Uaxactun. Clearly, this matter calls for more comparative material to achieve greater precision of definition. Our description of the Tikal settlement pattern marks one step in this direction.