ANCIENT AGRICULTURAL FARMSTEADS IN THE RIO BEC REGION OF YUCATAN

Jack D. Eaton

Introduction

The subject of this report is the description and analysis of Maya farmsteads of Classic period date in the Rio Bec region of Yucatan (Fig. 1). The farmsteads are associated with artificial field ridges and hillside terraces. These probably had both agricultural and non-agricultural functions.

Hillside terraces, or ridges, were first reported in the Rio Bec region by Ruppert and Denison (1943: 13, 50). These land features were noted in the southern part of the region and were simply referred to as "check dams." Ridges and terraces were also noted by me during explorations in the region during 1966-67, and again in 1970 when the ruins of Chicanna were excavated (Eaton 1974a: 51). In 1971 I continued reconnaissance (Eaton Ms.), which coinsided with one of the most ambitious seasons of milpa clearing in the region in modern times. This was a result of a marked increase in the regional population, notably roadside settlements that appeared with the construction of the new trans-peninsula highway (HWY 186).

After the milpas were burned, field ridges and hillside terracing suddenly became manifest in nearly every field examined. This clearly demonstrated what was previously suspected; that there had been an intense development of the land surface throughout the region in ancient times. Also noted in the fields, and clearly associated with the land development, were the remains of ancient structures. These included platform mounds and the base walls of small houses. The platforms and the houses were found individually and in groups, and certainly represent farmsteads.

The 1969-71 National Geographic Society-Middle American Research Institute project under E. Wyllys Andrews IV concentrated on the civic centers of Becan and Chicanna near Xpuhil (Adams 1974). It was not possible to handle the problems of ancient agriculture and settlement patterns at the time. In 1973 an ecological research group consisting of ecologists and archaeologists attacked the general problems of man-environmental relationships, especially as they apply to the collapse of Maya Classic civilization (Culbert 1973).[1] A part of the project focused on the patterning of Maya households and land use relating to the Late Classic period. The farmsteads selected for investigations are located east of Xpuhil, Campeche, which is located at KM. 153 on the Escarcega-Chetumal highway, and are believed to be representative of ancient rural settlement of the Rio Bec region. Situtated on artificially terraced hillsides, and at considerable distance from the monumental centers, these farmsteads were part of a region-wide form of intensive agriculture practiced from about 600 to 830 A.D.

During the 1973 field season I concentrated on a study of certain hillside farmsteads. Bill Turner, a cultural geographer, mapped and tested the terraced hillsides upon which the farmsteads are located (Turner 1973). The investigations were not only designed to obtain information relating to culture and chronology, but were also focused on collecting ecological diagnostics that might pertain to climate, climatic change, and agricultural production. The results of subsequent laboratory analysis of collected ecological materials, including soil samples, were not known at this writing.

The chronological framework is based on the regional ceramic sequence developed by Joseph W. Ball (Ball 1972). All pottery excavated during the season was analyzed by Ball, who provided the chronological interpretations in this report.

Each area studied was given an Operation number, and the separate excavations within an area were assigned a sub-Operation letter. This report will describe Operations 10, 17, and 21. These operations were selected as representing a few of what seems to be a rather large variety of structures noted to be associated with the remains of agricultural land modifications in the region. Included is a small one-room house (Op. 17 B), a larger one-room house with fenced enclosure (Op. 17 A), a one-room house with fenced enclosure adjacent to a platform (Op. 10 A, B, C, D), a relatively large one-room house of possible specialization (Op. 21 D), and an open house compound with fenced enclosure (Op. 17 C, D, E), and an open house compound on joining split-level platforms (Op. 21, A, B, C).

Attention has been given to a fairly detailed description of the actual construction and dimensions of the houses. It is felt that these data should be presented, even though they may be tedious to wade through, since so little is actually known of the constructional details of simple Classic period houses in the Maya lowlands.

DESCRIPTION OF THE SITES

OPERATION 10: This operation includes excavations of a small farmstead situated on top of a hill located 3 km east of Xpuhil crossroads and south of the Escarcega-Chetumal highway. The hill's north face has a steep rise which displays a series of ancient artificial terraces. The terraces were mapped and studied by Turner simultaneously with the excavations of the associated house structures.

The farmstead investigated consists of a small one-room house of rectangular plan, a fenced enclosure adjacent to the house, and a raised platform with rounded corners (Figure 2).

Sub-Operation A was the excavation of a 1 x 3 meter trench located just to the south of the enclosure wall. The purpose was to sample sub-surface materials and to note the depth of the soil before excavating the structures. Apparently this had been a refuse dump area, since a large collection of potsherds, and some lithic debitage

was obtained here. Much of the pottery was eroded, but all identified sherds belong to the Bejuco ceramic phase (Ball 1972). This is an early phase in the Late Classic period (ca. 600-730 A.D.).

Sub-Operation B included the excavation of Structure 1, the one-room rectangular house forming the west side of the complex. After bushing the site, and before excavations began, the outline of the house walls could be made out rising slightly above fallen stones and accumulated forest debris (Plate 1, a). This is typically how all of the structures identified as houses were found.

Only the inside of the house was completely excavated. The house is of rectangular plan with the long axis north and south. The actual orientation seems to be about 18° east of true north. The magnetic declination here is 6.5° east. The walls are built of stones and slabs, some of which are roughly formed. The walls appear to have been dry-laid, although any mortar used could well have been leached out. There is no evidence of wall plaster inside or out. The walls are about 50-60 cm. in thickness and now stand about 45-70 cm. high above the floor. They probably originally rose to a height of around 1.7 m., judging by the amount of fallen stones. The walls probably supported a roofing of palm or grass thatch as shown in the suggested restoration drawing (Figure 2).

In contrast to the rather crude construction of the walls, the room floor is a thick, hard, lime plaster. The upper surface of the floor, which originally had been level and smooth, was found to be surprisingly durable, although worn and cracked. The plaster is 2-3 cm. in thickness. It was laid on a layer of fine grouting, which in turn rested on a mixture of gravel fill and dirt deposited on bedrock. The construction of the floor is identical to floors examined in formal buildings of approximately the same Late Classic (Bejuco phase) period in nearby monumental centers. Perhaps the same masons were involved.

At the north end of the room is the remains of a raised bench. This had been a later addition, since the floor runs under the bench. The bench is made of gravel fill behind a retaining wall, which forms the bench's leading edge, and has a plaster surface. The bench measures 33 cm. high and 1.20 m. deep. This was probably a sleeping bench.

The house doorway is nearly centered in the east wall and is about 70 cm. wide. The jambs are built of relatively large stone slabs which have been roughly faced within the doorway. The room inside dimensions are about 2.10 m. wide by 4,85 m. long. These are mean dimensions since the room is not a perfect rectangle.

Excavation of the room required the removal of about 60 cm. of material overburden covering the floor. This was removed in two distinct levels. Covering the floor was approximately 20 cm. of gray (Munsell 10YR 6/1) dirt containing some scattered pottery fragments and fallen wall stones. Also found was a gray obsidian prismatic blade. Covering the floor midden was about 40 cm. of dark gray (10YR 4/1) surface humus.

After the room had been cleared out and recorded, a large trench, including most of the floor area, was dug below the floor to limestone bedrock. Most of the pot-sherds collected from both above and below the floor were badly eroded; however, the identifiable sherds seem to belong to the Bejuco ceramic phase.

Sub-Operation C included excavations within the walled enclosure on the east side of Structure 1. This is an almost square area formed by the front of Structure 1 on the west, the retaining wall of Structure II (the platform with rounded corners) on the east, and two parallel walls forming the north and south sides. The mean internal dimensions are about 3.55 m. by 4.0 m. There is an entrance passway 90 cm. wide at the northeast corner of the enclosure. The parallel walls are built of crude stones and slabs similar to the house walls, but perhaps not as well laid. No trace of mortar was noted. The walls had been built up from bedrock and presently stand about 40-70 cm. in height, and are about 50-60 cm. thick.

The entire enclosure was excavated following three natural levels. The lowest level. laying upon bedrock, was a fill of gravel and dirt for leveling the enclosed space, which is built on a slope. The top of this level was the actual flooring of the enclosure. Found upon the flooring, and mostly near the walls and corners, were sherds of utility vessel representing many large pots and jars. The large amount of pottery and also flint debitage found here, within a 20 cm. deep floor midden, suggests that this was a storage or work area. Covering the floor midden was about 30 cm. of surface humus. Although much of it was badly eroded, the pottery from above and below the flooring seems to belong to the Bejuco phase.

Sub-Operation D includes Structure II, the platform on the east side of the complex. Forming the east side of the enclosure is a wall built of roughly cut slabs. It presently rises about 1.30 cm. above bedrock and is the west retaining wall of the platform crowning the hilltop. The platform is terraced with two levels on the south side, and three levels on the south side, and three levels on the north (down slope) side. The main platform is about 6.90 m. long, in the east-west axis, by about 4.90 m. wide, and has rounded corners. The south side of the platform rests upon bedrock, while the north side joins the lower terrace. Rising 20 cm. above the main platform is a smaller platform believed to be the base and floor of a house. This upper platform is about 4.0 m. wide by 5.0 m. long. It has rounded ends and appears to be apsidal in plan. A distinctive flooring was not noted, but this is not surprising since the platform has been subjected to weathering for a long time.

It is only a guess that a house with apsidal plan once stood on top of the plat-form or that is was built of wattle-daub and thatch roof similar to modern houses seen in northern Yucatan. This is the only house platform known to have been examined to date in this region which has a plan of this shape. The apsidal house shown in the restoration drawing (Figure 2) is only a suggestion.

The platform walls were trenched to establish the form, and a test pit was dug through the center top. The terrace retaining walls are built of laid slabs without any trace of mortar. The structural fill is gravel with lots of dirt built up from bedrock. Most of the potsherds recovered from excavations here are very badly eroded, but the identifiable sherds seem to belong to the Bejuco phase. The orientation of the platform is about 18° east of true north.

OPERATION 17: This operation includes the excavations of two separate house structures and a house complex. These farmstead houses are situated on an artificially terraced hillside located 5 km. east of Xpuhil crossroads, and north of the highway. The terraced hillside was examined by Turner during this work in the area.

Sub-Operation A was the excavation of a house situated on the eastern part of the study area (Figure 3). This is a one-room house facing south and has a fenced enclosure along the front and west sides. The house is rectangular in plan with the long axis running east and west. The actual orientation is about 18° east of true north.

The walls of the house are built of crude stones and slabs, and are roughly 60 cm. in thickness. No trace of mortar was seen, but it could have been leached out. Also there is no indication of wall plaster. The walls presently stand about 50-80 cm. in height above the floor, but probably were originally around 1.7 m. high. The roofing was most likely grass or palm thatch as shown in the suggested restoration drawing (Figure 3).

There is one doorway 85 cm. wide approximately centered in the south wall. The jambs are built of large slabs which are better cut and fitted than the stones in the rest of the wall.

The original dimensions of the room are 2.40 m. wide by 5.90 m. long. A partition wall had been added which closed off the western end of the room. It is built upon the floor and presently rises to about 50-60 cm. This wall has no doorway and is constructed of crude stones similar to the house walls. The exact purpose of this wall is not clear. It seems a little high to be a retaining wall for a bench, although this cannot be ruled out. If it had been a bench one would expect to find the enclosed space filled with gravel, as is the usual practice. The enclosed space was found filled with the same type of dirt as described below for the main room. No cultural materials were found within this walled-off enclosure.

The room floor has a hard lime plaster surface that was found in excellent preservation. The floor construction is identical to floors found in the regional monumental buildings of approximately the same date. Although the house is built on a hill slope, the floor is quite level. The plaster surface of the floor is around 3 cm. thick with an underlay of fine grouting. Below this is 45 cm. of gravel fill with lots of dirt. As noted in the section drawing (Figure 3) the house was built upon the ancient ground surface which is about 35 cm. of dark gray (10YR 4/1) surface humus covering the limestone baserock.

The room floor was found covered with 40 cm. of dirt overburden. This included 20 cm. of light gray (10YR 6/1) dirt covering the floor surface, and an overlay of about 20 cm. of dark gray (10YR 4/1) surface humus. Upon the floor, and near the east wall, were fragments of three large pottery jars. The jars belong to the Bejuco ceramic phase. Nothing else was found in the room. Subfloor trenching did not produce a single potsherd.

The outside enclosure walls are built of stones and slabs much like the house walls, except that they probably did not stand as high. The walled enclosures are obvious additions to the main building. The walls were built upon the ancient ground surface and the space between the walls and the house was filled with gravel and dirt to a few centimeters below the house floor level. The surface seems to be packed sascab.

As noted in the restoration drawing (Figure 3) part of the stone fencing is built upon a platform which extends south from the building. This platform, which is about 2.40 m. wide and rises roughly 1 m. above ground level, extends down-slope from the house and seems to be part of the hillside artificial ridge network. Found within the extended part of the walled enclosure was an extremely dense deposition of broken pottery utility vessels. Most of the vessels are large storage jars belonging to the Bejuco ceramic phase. Some circular stone lids for the jars were also found. Apparently this had been a storage area, and possibly associated with the local agricultural production.

Sub-Operation B is a small one-room house located approximately 50 meters southwest of sub-Operation A. The house is rectangular in plan and faces south (Figure 6). The building is oriented about 21° east of true north. The walls are built of crude stones that appear to have been laid dry. A doorway 65 cm. wide is approximately centered in the south wall. Forming the door jambs are large slabs which are roughly faced. The walls presently rise about 60-80 cm. above the floor level, but originally were probably around 1.7 m. in height. They are roughly 60 cm. in thickness and give no hint of wall plaster. The walls probably supported a thatch roof as shown in the suggested restoration drawing (Figure 4).

The room inside dimensions are about 2.20 m. wide by 4.0 m. long. The flooring in the house seems to be a packed layer of sascab over a dirt and gravel fill, which was built up from bedrock. Covering the floor was about 35 cm. of surface humus, but no indication of a floor midden. The floor was trenched to bedrock and produced only a few very eroded potsherds. Although pottery dating could not be made here, the basic house construction and orientation suggests contemporaneity with other nearby Bejuco phase buildings.

Sub-Operations C, D, E, and F comprises a farmstead complex with one-room houses forming three sides of a walled court (Figure 5). The complex is situated roughly 150 meters west of Sub-Operation B and occupies a local hilltop.

Sub-Operation C; Structure I, forming the north side of the complex, is a one-room house with a doorway facing the court. The house walls are built of rough stones and slabs which appear to have been laid dry. There is no evidence of wall plaster. The walls are presently about 70 cm. to 1.0 m. in height, but originally were over 1.5 m. high. The thickness is about 60 cm. The house roofing was probably thatch. The doorway is 90 cm. wide and is built of large slabs which are cut flat to form the jambs. The west doorjamb presently stands 1.5 m. high. The room inside dimensions are 2.45 m. wide by 5.45 m. long. The long axis is east and west, but actually oriented roughly 20° east of true north (Plate 1,b and Figure 5).

The room floor surface is lime plaster which is unusually thick and extremely hard, and in quality, equals floors found in the monumental centers. The flooring was built with a slight down-slope to the doorway from all corners of the room, and would provide very good drainage. The door-sill is ramped down and out to the paved court, instead of having a step, as is the usual practice. The floor surface is about 5 cm. thick with a grouting underlay. Below is gravel fill with lots of dirt. Two distinct sub-floor levels were noted. From floor surface to about 40 cm. is gravel with gray dirt containing sherds and chips of flint. Below to bedrock, which is roughly 70 cm. below the floor surface, is a level of dark gray (10YR 4/1) dirt with gravel. This is hard packed and contains a relatively large deposit of sherds and lithic debitage. This lower level, which underlies the whole complex, appears to represent an earlier occupation strata upon which the compound was built. All identified subfloor materials apparently belong to the Bejuco ceramic phase.

The room floor was found covered with about 40 cm. of dirt in two distinct levels. The upper 20 cm. level was dark gray (10YR 4/1) surface humus. Underlaying this was a light gray (10YR 6/1) floor midden. The midden produced a relatively large collection of Bejuco phase pottery fragments and some lithic debitage. The sherds and flint were scattered throughout the midden, but tended to be most dense near the western end of the room. Also uncovered was a brown flint projectile point and a fresh water mollusk shell (Sp. unknown).

Several incised lines, undoubtedly representing part of a graffito or game pattern, were noted on the floor in the southwest corner of the room.

Sub-Operation D; Structure II is a one-room building forming the west side of the complex and faces the court. It is separated from Structure I by about 60 cm. The room is 2.10 m. wide by 4.30 m. long. There is a bench at the south end of the room, and the remains of a bench built over the floor at the north end of the room. The walls are built of crude stones and slabs as described for Structure I, and are about 60 cm. in thickness. The doorway, which is 95 cm. wide, is about centered in the east wall. The walls probably supported a roof of thatch. The building's long axis is north and south, and oriented about 20° east of true north.

The room floor is surfaced with hard lime plaster. The sub-surface construction

is as described for Structure I. Entering the doorway is a step-up of 6 cm. in line with the outside wall. About 40 cm. inside of the room there is another step-up of 8 cm. to the room floor. The double-stepped floor feature is also found in Bejuco phase monumental buildings in the region (Eaton, MS in preparation).

The bench at the south end of the room measures 1.23 m. deep and 18 cm. high. It was built simultaneously with the floor, as the floor does not extend under the bench. The bench has a lime plaster surface identical to the flooring, and is in excellent preservation. The badly destroyed remains of an added bench were uncovered at the north end of the room. This bench was originally over 1 m. in depth and roughly 20 cm. high. These were probably sleeping benches.

Covering the floor has been about 40 cm. of overburden. The top 20 cm. was surface humus. Below was gray dirt floor midden containing eroded potsherds, a clear gray obsidian prismatic blade, a small clay head of a feline creature, and a marine (oliva sp.) shell. Sub-floor trenching produced only a few eroded potsherds. The identifiable sherds seem to belong to the Bejuco phase.

Sub-Operation E; Structure III forms the south side of the group. This is a relatively smaller one-room structure facing north onto the court. It is felt that this was a storehouse, whereas the other two buildings were domestic houses. This building is obviously a structure added to the group, and is attached to Structure II as shown on the plan (Figure 5). The building's long axis is east and west, but with an orientation of roughly 20° east of true north, in line with the whole complex.

The inside room dimensions are 3.5 m. long and 2.0 m. wide. The walls are constructed of crude, dry laid slabs, and are about 60 cm. thick. The walls probably supported a thatch roof. The flooring, although much destroyed, seems to have been packed sascab.

The floor was found covered with about 30 cm. of dirt overburden. Most of this was surface humus, with a few centimeters of gray dirt covering the floor. Found upon the floor was a relatively large amount of broken pottery, some flint debitage, and two percussion flaked, core bifaced flint celts. The pottery was concentrated near the west end of the room and consisted primarily of large Bejuco phase utility jars.

Sub-floor trenching exposed a structural fill consisting of sascab and gravel, and included a few very eroded sherds.

Sub-Operation F: The court is bordered on three sides by buildings, and on the east by a dry-laid stone fence. The internal dimemsions of the court are 3.75 m. by 4.95 m. It had been paved with lime plaster, now badly destroyed by roots. The entrance to the court is at the northeast corner where there is an opening roughtly 70 cm. wide. Excavations in the court consisted of clearing along the walls, and with some testing in the center. Dense deposits of potsherds were uncovered everywhere within the court,

but the deposition was particularly deep along the east wall. The pottery recovered consists mostly of large Bejuco phase utility pots and jars.

OPERATION 21: This operation included the study of a house complex, and a separate large house, located 3.5 km. east of Xpuhil crossroads. The houses are south of the highway and situated on a gently sloping hillside which displays a network of artificial ridges. The house complex consists of three small structures situated on split-level raised platforms which face a lower level open court (Figures 6-7). This complex might be considered a plazuela group. The separate large house is located to the south of the complex and stands alone (Figure 8).

Sub-Operation A; Structure I is a one-room house forming the north side of the complex. This structure occupies the highest of the three split-level joining platforms. The long axis of the house is east-west, and is oriented about 20° east of true north.

The house walls are built of crude stones and slabs as described for the other houses in the area. Small amounts of mud mortar, possibly hardened with lime, were noted in crevices in the west doorjamb. This is the only evidence of the use of mortar in house wall construction so far recorded. The front doorway is 1.20 m. wide, and the jambs are constructed of large stacked slabs that are cut flat facing the doorway. The west jamb presently stands 1.65 m. above the door-sill. The building walls probably rose a little higher that this originally and supported a thatch roof. Only the lower part of the front and east walls remain standing. The west and rear walls have completely collapsed, and much of the flooring there has sloughed off. The room's original dimensions were about 2.50 m. wide by 7.70 m. long. A dividing wall had been added which closed off the eastern part of the room. The wall, which has no doorway, presently stands around 50 cm. high and was built over the floor. The problem here is the same as noted in Operation 17-A. The enclosed space contained no structural fill, such as gravel, as would be expected in the case of bench construction. When the enclosed space was excavated it was found to have two distinct levels of dirt overburden -- a top humus level, and an underlying floor midden -- that has been found in excavating all of the houses. Sherds of several large Bejuco phase pottery jars were recovered from the floor of the enclosure. Perhaps this was a store-room.

The house floor was originally surfaced with lime plaster, now mostly destroyed by roots. The floor construction is the same as recorded in the other houses.

Upon entering the front doorway from the terrace there is a step-up of 10 cm. to the door-sill. Within the room is another step-up to the floor. This double step-up entering the room has already been noted to be a characteristic of Bejuco phase monumental buildings.

The platform upon which the house is situated rises nearly 2 meters above the ancient ground surface. It is constructed of retaining walls built of crude stones

enclosing a gravel fill. The relatively large collection of potsherds recovered from sub-floor excavations suggests a Bejuco phase construction.

Sub-Operation B; Structure II forms the west side of the complex. It is situated on a platform which joins Structure I platform at right angle, but at a lower level. This is also a one-room house with walls built of curde stones and slabs as noted for Structure I. Only about 50 cm. of the wall remains standing above floor level. These walls probably supported a thatch roofing. The building's long axis is north-south with an orientation about 18° east of true north.

The room measures 2.60 m. wide by 5.10 m. long. The entrance doorway is 1.20 m. wide, and is about centered in the east wall. A wall roughly 50 cm. thick had been constructed over the floor just south of the doorway. This wall is built of crude stones, but faced on the north side by carefully cut veneer slabs. Apparently these are reused facing stones taken from a nearby monumental building. This was almost certainly the retaining wall of a bench which stands 55 cm. in height. No bench surface remained, but behind the retaining wall was structural fill of gravel.

The room flooring is a thick, lime plaster with grouting underlay, and with gravel fill below to bedrock. When excavations began there was about 45 cm. of dirt overburden covering the floor. This included around 20 cm. of dark gray surface humus over a light gray floor midden. Only a few eroded sherds were recovered from the floor. The floor surface was found to be in excellent preservation. There is a double step-up entering the room as described for Structure I.

Sub-floor excavations produced a fairly large collection of potsherds. Apparently the house and platform, which is actually one structural unit, was built during the Bejuco ceramic phase.

Sub-Operation C; Structure III is a small one-room building on the south side of the group. This was a later addition built out from the southeast corner of Structure II terrace wall. The room measures 1.90 m. wide by 2.20 m. long. The doorway is 75 cm. wide. The walls are built of crude stones and slabs in the same tradition as the other houses, and probably had a thatch roof. This structure was built upon the lower court, and the room floor is level with the plaster surface of the court, which is 70 cm. below Structure II terrace.

Covering a badly decomposed plaster floor was 30 cm. of surface humus with a thin underlay of light gray dirt. Only a few eroded potsherds were found on the floor.

Structures I and II were certainly domestic houses; however, Structure III might have been a storehouse. The house group was built upon the ancient ground surface, rather than upon bedrock.

Sub-Operation D; A large one-room house is located approximately 100 meters south of the complex described above (Figure 9). The building faces south with

the long axis running east and west. The actual orientation is about 13° east of true north. The room measures 2.40 m. wide and 15.10 m. long. This is an unusually long room and there were no partition walls. Three front doorways are spaced in the south wall. The center doorway is 1.20 m. wide, while the flanking doorways are 70 cm. and 90 cm. wide. There is a step-up of around 12-15 cm. entering each doorway from the outside.

The building walls are about 60 cm. thick and are built of crude stones and slabs, but finished on the exterior with carefully cut (but poorly fitted) blocks and veneer slabs. These are reused facing stones taken from some nearby formal building. This is the only house recorded to date that is faced on the exterior with reused cut stones. The walls presently stand around 60-80 cm. above the floor, but probably originally were at least 1.7 m. high and had supported a roof of thatch.

The room floor was surfaced with lime plaster, which was found badly decomposed and destroyed by roots. In the northeast corner of the room is the remains of a platform 45 cm. high. This appears to have been a bench. Covering the floor was about 30 cm. of surface humus, and under this was a thin layer of gray dirt. The entire room was excavated, but not a single sherd, or other cultural materials, was found. Apparently the room had been left quite clean by the last occupants. Sub-floor trenching produced a small collection of potsherds, some of which seem to belong to the Chintok ceramic phase (Ball, personal communications). This is a later phase in the Late Classic period (ca. 730-830 A.D.).

The unusually long dimension of this one-room structure, and the placement of the three front doorways, differs considerably from the other buildings studied in the area. Perhaps it had some function other than domestic within the farming community.

SUMMARY AND IMPLICATIONS

The ancient buildings described in this report were only a few of the seemingly numberless stone houses noted scattered across the central southern part of the Yucatan peninsula. The houses are everywhere found associated with evidence of a specialized form of intensive agriculture which employed the use of hillside soil traps, forming terraces, as well as other linear walled structures, apparently designed to modify land use and improve irrigation. This land surface altering by the ancients to intensify man-land relationships is described by Turner (1973).

The small buildings, including single houses, and composite groups of houses, comprise the farmsteads of a region wide farming community that flourished during the Maya Late Classic period.

The term farmstead has been given to the houses, and clusters of houses, which have ground plans of obvious specialization and are integrated with intensive

land development. The farmsteads studied are one-room stone built houses with rectangular plans, are usually elevated only slightly from the ground surface, and often include fenced enclosures. These houses are in marked contrast to the endless parade of house mounds noted throughout the Maya lowlands which are raised platforms upon which once stood structures built of perishable materials (Willey and Bullard 1965; Wauchope 1938).

Operation 10 (Figure 2) is the only example studied which displays the two structural types (the platform mound and a house with stone walls) in close proximity. In this example it has only been assumed that the platform (Structure II) had supported a house. Perhaps it served some other utilitarian function within the farmstead complex.

House (platform) mounds, and the partly standing walls of stone houses, were both noted in the region. Just what the relationships between these differing structural types were is not known, and chronological differences may be involved.

A review of the building drawings in this report (Figures 2-8) will show that although the farmsteads differ somewhat in layout, the individual houses are basically similar in size and construction. The rooms average around 2.40 m. in width and somewhere around 5.0 m. in length, although the length dimension is the most variable. Average room dimensions of the houses are remarkably similar to average room dimensions within the monumental buildings in the regional civic-religious centers (Ruppert and Denison 1943; Eaton Ms. 1972).

Another common house feature is the exceptionally well built plaster floors. It has already been pointed out that the house floor are essentially identical to floors in the formal monumental buildings. It is therefore likely that the masons who laid the monumental building floors were farmers who built their own houses to the same dimensions.

Some of the houses have benches, while others do not. Operation 17-D house has a built-in bench, while Operations 10-B, 17-B and 21-B houses had masonry benches added to the rooms. The benches possibly functioned as sleeping platforms. If this were the case, then perhaps sleeping platforms built of perishable materials were once provided in rooms without masonry benches. It is interesting to note that benches occur in many monumental buildings as well, particularly those classified as palaces and possibly interpreted as elite residences (Adams 1970).

The walls of the farmstead houses are built of rubble stones and roughly formed slabs. The stones used were not of any uniform size and varied from handsize to occasional large slabs. The walls were, however, laid to a fairly uniform thickness, which was maintained at around 50-60 cm. House walls were found to be built up from either the ground surface or from bedrock. The practice seems to favor the latter. It is possible that mud mortar was used in the construction of the walls, but only a small amount was noted in one of the houses (Operation 21-A). Nowhere was there even a hint of wall plaster.

The crude stone walls contrast sharply with the finished plaster floors. This is an understandable contrast of practicality. Walls built of laid stones, and supporting a thatch roof, would allow the house to "breathe," and consequently be more comfortable in tropical climate with respect to tight all-masonry buildings.

Every house investigated was initially found with the remaining walls rising slightly above the forest debris, delineating the room and position of a single front doorway. Considering the amount of fallen wall stones, found both inside and outside of the rooms, the walls must have originally stood somewhat less than 2 meters, probably closer to 1.7 meters, in height above the floor. Regarding the construction and thickness of the walls, with restricted load carrying capacities, as well as the location within a tropical area, it seems most likely that the roofing of the houses were built of poles overlaid with grass or palm leaf. Perhaps both thatching materials were locally available in ancient times and it might have simply been preference. A grass thatch provides a much better roofing lasting many years longer than palm leaf when properly installed. Modern Indians in the region prefer to build their house roofing of palm thatch, but more frequently of carton de lamina, which is a cheap, oil impregnated, corrugated cardboard. All agree, however, that a good grass thatch is best by far, but it takes much more time and effort to build.

In profile the roofs of the farm houses probably rose to a peak as shown in the suggested restoration drawings. It is probable that the actual construction of the roofing was as described by Wauchope (1938) for modern Maya houses. Further evidence for this type of house roofing being used in ancient times in the Maya lowlands is depicted on the facades of monumental buildings (Wauchope 1938; Pollock 1965; Eaton 1972b), on wall murals (Morley 1946; Proskouriakoff 1965), as well as wall graffiti Webster 1963; Eaton 1974 and ms. 1974).

In addition to domestic houses in some of the farmsteads there are smaller, one-room structures that might have functioned as store-rooms. Examples are noted at Operation 17-E (Structure III) and Operation 21-C (Structure III). In both examples the relatively smaller structures were additions to the compounds, were not as carefully constructued, and when excavated produced relatively large quantities of utility pottery vessels.

The farmsteads at Operations 10 and 17 have walled enclosures adjacent to the houses. These enclosed areas provided a private walled courtyard through which one must pass when entering or leaving the houses. Excavations have shown that these walled enclosures were used as storage or work areas. This is demonstrated by the concentrations of utility pottery vessels, and flint tools and debitage found there. These walled courts served as restricting, or protective, buffer zones between the house entrances and the outside world. This seems to suggest a concern for privacy and stability of residence. A design for defense cannot be ruled out.

What stratified position within Classic Maya society did the people of the

farmsteads occupy? The answer to this is purely speculative in view of what little is actually known of ancient lowland Maya social structure. The masonry construction of the houses, with private courtyard providing controlled access, is suggestive of elevated social status, when compared to the vast numbers of open house platforms also in the area. The house platform, with its assumed perishable superstructure, seems to have been the most common form of domestic architecture throughout the Maya lowlands. In modern Yucatan, masonry construction has distinct status over pole construction. The development in the monumental centers from open access in the Early Classic, to more and more restrictive access in the Late Classic, as the elite residence grew and became more distant from the peasantry, is demonstrated in the excavations of Structure A-V at Uaxactun (Smith 1950).

The farmers who built the houses described here were not just accomplished masons, they were skilled at building floors that in some cases equal those in the finest monumental buildings. The evidence here supports the view that the skills employed to build the great centers were drawn from the surrounding countryside. A specially skilled farmer would conceivably have status over a simple subsistence farmer.

That countryside farmers supported the monumental centers, which in return provided the civic-religious leadership, is widely accepted. Luxury pottery recovered from the farmsteads suggests that the farms not only provided subsistence for the farmers, and required civic-center support, but also produced a surplus for market trade. The produce of the farmlands, whether it was corn, root crops, orchard cropping, or other, is yet undetermined.

Reviewing the structural drawings in this report, and remembering that these represent only a tiny sampling of those in the area, one is immediately confronted with a variety. These range from a simple one-room house, to house compounds with stone fences, and also house complexes upon split-level platforms. There is also an unusually long house (Operation 21-D), but this could possibly be interpreted as a lodge or temple. That we are confronted with functional, as well as class, distinctions, is probable.

The arrangement of the house compounds suggests a social organization consisting of nuclear family groups. These may have been extended families as suggested by architectural modifications and expansions. Extended families seems to have been a characteristic of the Late Classic (Sanders 1973). Predominately male responsibilities, for example in land development for agriculture, and in already noted masonry skills, suggests that these were patrilocal extended families. This is often associated with a patrilineal rule of descent.

A study of the floor area and arrangement of the houses in a compound, including the sleeping benches, allows for a maximum extended family residence of around 8 to 10 persons. This is in line with the figure given by Sanders (1973) for ancient Maya extended families.

A formal settlement pattern study of the farmlands was not undertaken during the current research. Prentice Thomas is independently making such a study, but no results have been disseminated to date. Turner (1973) noted in his terraced hillside surveys that there were, on the average, one house mound for every 0.75 hectares of terraced hillside. No distinction was made regarding platform mounds versus stone walled houses. By extension of calculations and applied factors Turner has come up with an estimated, or potential, population ceiling of around 150 persons per square kilometer for the central Rio Bec region. Although this is speculation with very limited data, it does fall somewhat in line with Sanders' (1973) peak population estimate for the Maya lowlands.

Excavations of the farmsteads has produced fairly large collection of pottery for analysis. Much of the collected pottery was badly eroded, but the identified sherds seems to belong principally to the Bejuco ceramic phase (ca. 600-730 A.D.), and a few to the Chintok ceramic phase (ca. 730-830 A.D.). These two ceramic phases are Late Classic in date (Ball 1972), a time of apparent population increase, with a corresponding architectural development that produced most of the impressive monumental buildings in the region. This period immediately preceded the collapse of Classic Maya civilization (ca. 830 A.D.) in the central lowlands.

Potsherds belonging to a later (Postclassic) ceramic phase were not identified from the farmstead collections, but some were apparently found in certain terraced hillside collections. Although this might be due to limited sampling or incomplete analysis of eroded sherds, the inability to demonstrate occupation of the farmsteads beyond the Classic period, and only sporatic presence, but not necessarily occupation, of the farmlands in the early Postclassic, is of some significance.

The data suggests that the farmsteads, and the associated intensive agricultural production, were abandoned at about the same time that monumental building activity ceased (ca. 830 A.D.). Perhaps this was when Maya Classic society terminated. The apparent absence of Postclassic construction and occupation of the farmsteads, and only a scattering of probably Postclassic materials out on the farmlands, contrasts strikingly with the large deposits of early Postclassic period (Xcocom phase) materials found at the civic centers of Becan and Chicanna (Ball 1972; Eaton 1972b and MS 1974).

The apparent drastic reduction in population after the collapse of the Classic way of life, accompanied by reduced demands for subsistance, civic center support, and possibly agricultural trade produce, probably was a factor in the abandonment of intensive farming. The practice of intensive, high productive, and probably diversified farming might have terminated rather quickly after the collapse of the civic centers. The survivors of the catastrophe evidently reverted to basic subsistence farming. The shift to subsistence farming - probably milpa - would not require the full time occupation of the farmlands as in earlier times. The data suggest that the civic centers were occupied in Postclassic times by simple agriculturalists practicing elementary subsistence farming which left little material evidence out in the countryside. This would then complete the

reversion back to a near static state similar to what is seen in the rural areas of Yucan today.

ACKNOWLEDGMENTS

I wish to express my thanks to Dr. Richard E. W. Adams, Director, and all of the 1973 project staff members for the helpful criticisms and suggestions I received during our long field season. I especially thank Dr. Joseph W. Ball for his valuable analysis of the pottery.

The generous financial support from the National Geographic Society is gratefully acknowledged.

My thanks are extended to the following institutions and institutions and individuals who also gave us needed financial support: the University of Wisconsin, the University of Texas at San Antonio, the Institute for Maya Studies, Mr. Robert Little, and Capt. Hal Ball of Eastern Airlines.

END NOTE

1: Work was funded under a grant from the National Geographic Society. Personnel from the University of Wisconsin and the University of Texas at San Antonio participated. R.E.W. Adams acted as Project Director and I was Field Director for most of the season. James Stoltman was Field Director during the early part of the season. Field work was done under the auspices of the Mexican Instituto Nacional de Antropología e Historia.

Plate 1a: Remains of house at Operation 10 before excavating. This is fairly typical of houses found in the region. Note the standing doorjambs.

Plate 1b: Interior of house at Operation 17-C. Note wall construction and plaster floor. Shown here is a typical farmstead house of the region.

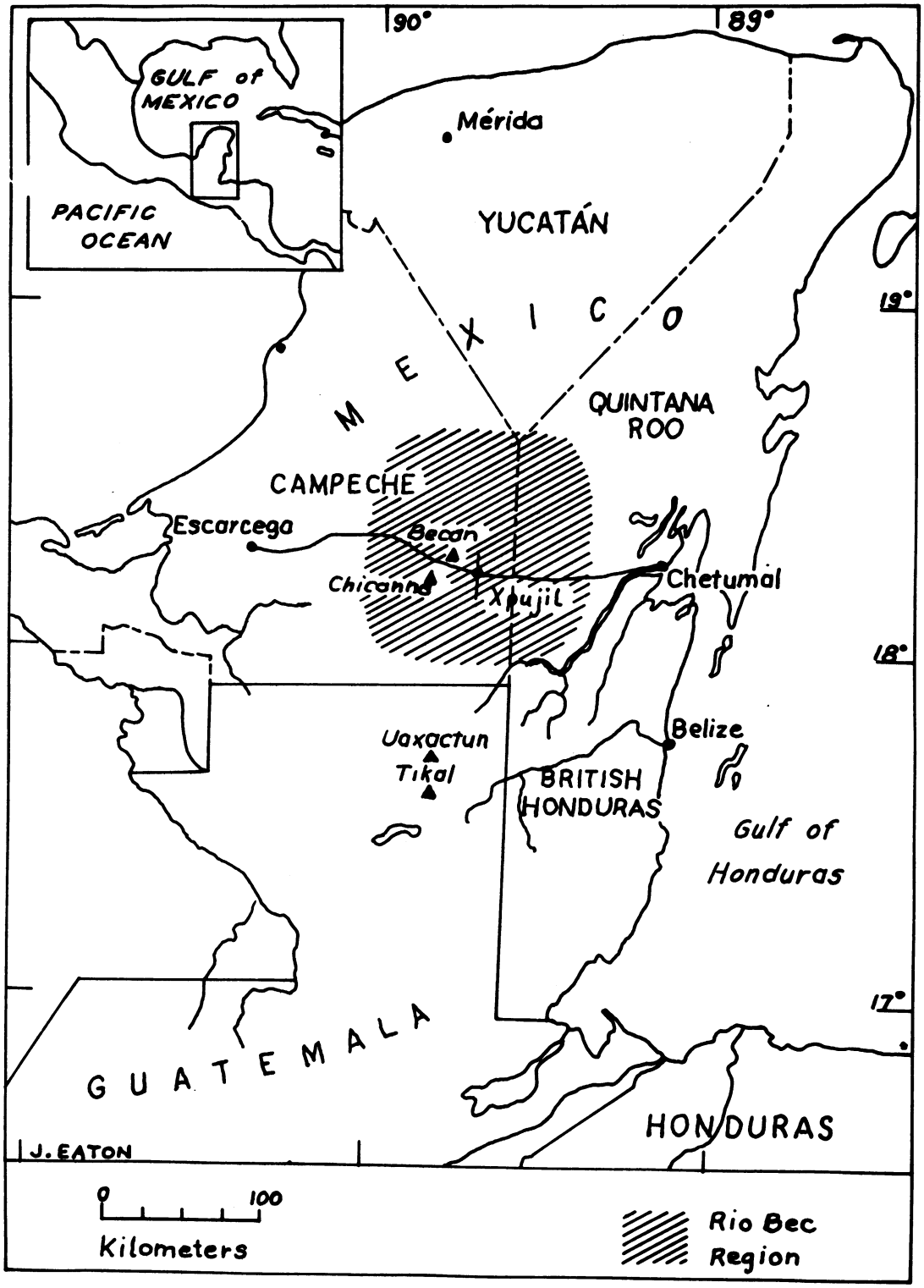
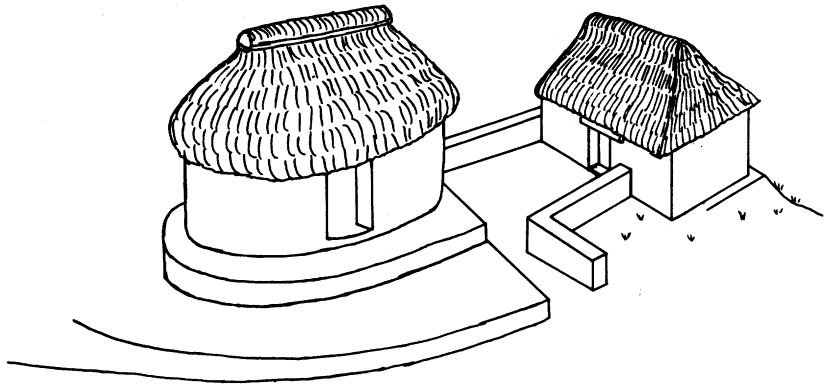
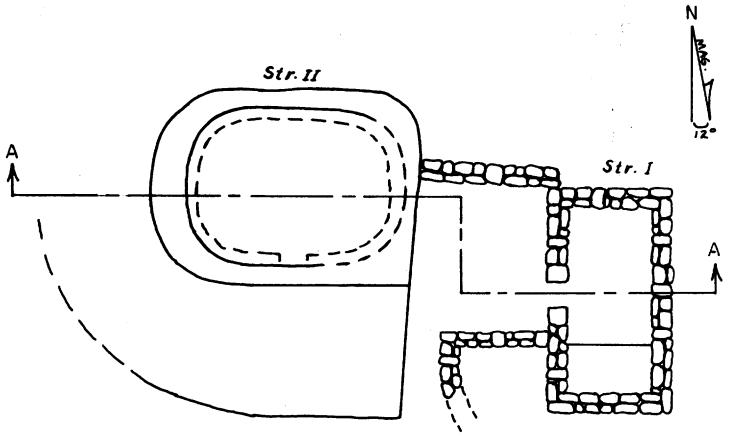
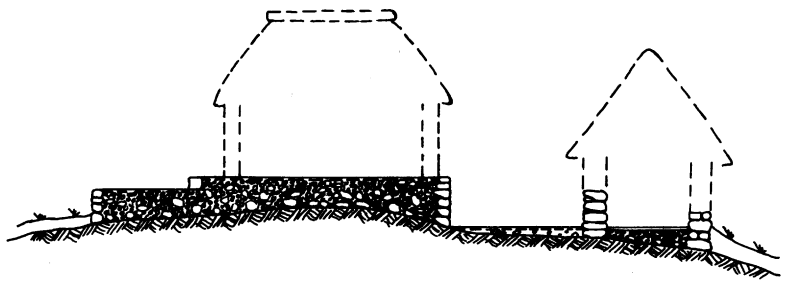


Fig. 1 Map of Yucatan delineating the Rio Bec region.





PLAN



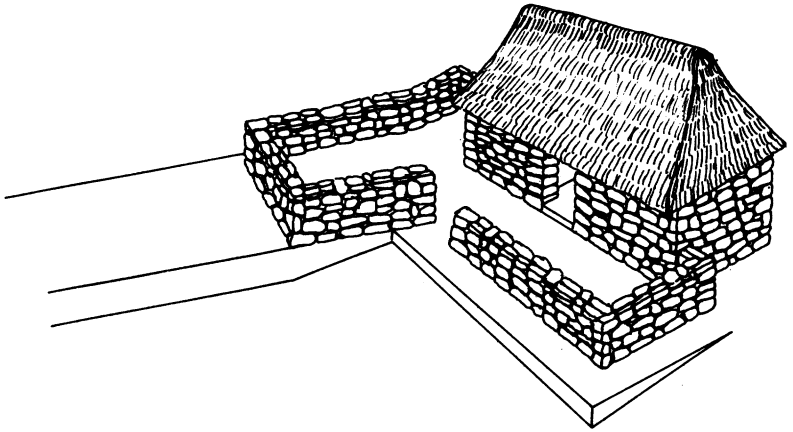
SECTION A-A

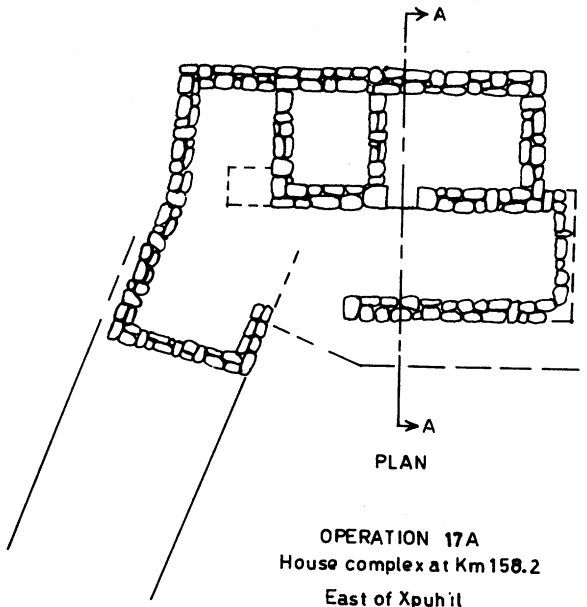
OPERATION 10 A,B,C,D
House complex at Km.156
East of Xpuhil

0 1 2 3
Meters

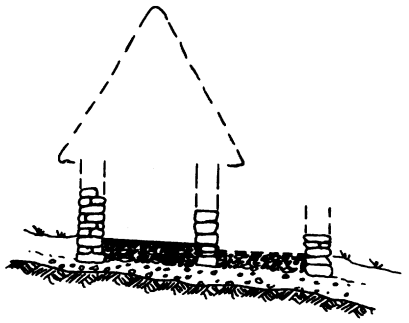
Campeche, Mexico

Jack Eaton
March 1973

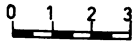




PLAN



SECTION A-A

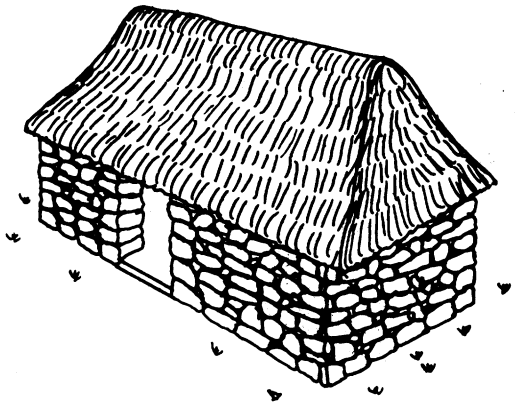


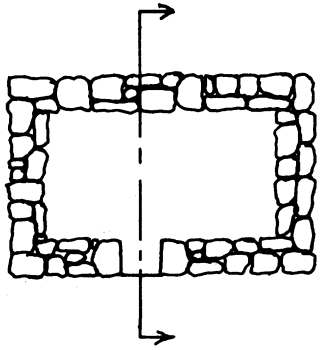
OPERATION 17A
House complex at Km 158.2
East of Xpuhil

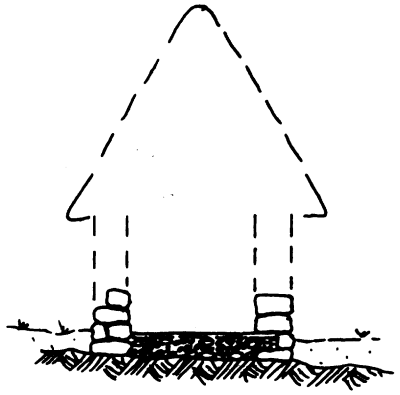
Campeche, Mexico

Figure 3

Jack Eaton
April, 1973



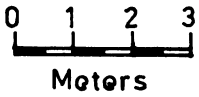




PLAN

SECTION

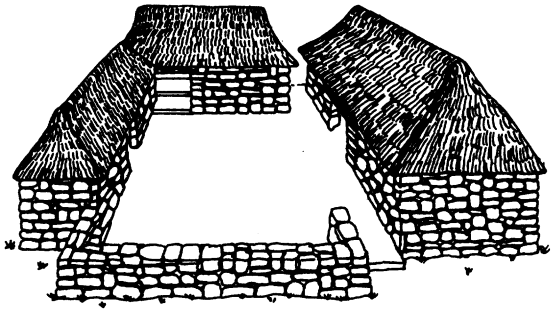
OPERATION 17 B
House at Km 158.2
East of Xpuhil

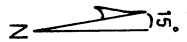


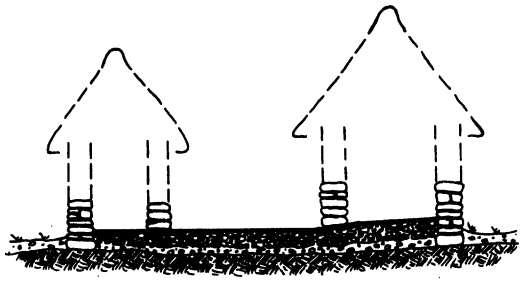
Campeche, Mexico

Jack Eaton
April 13 1973

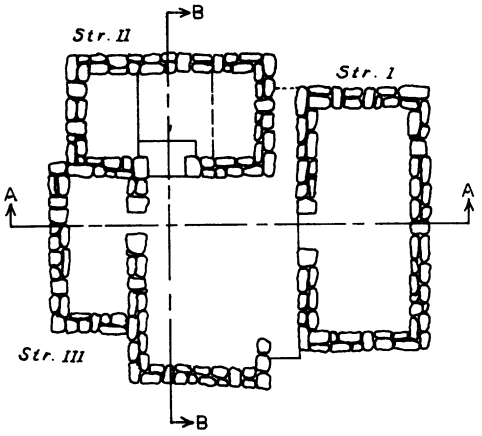
Figure 4



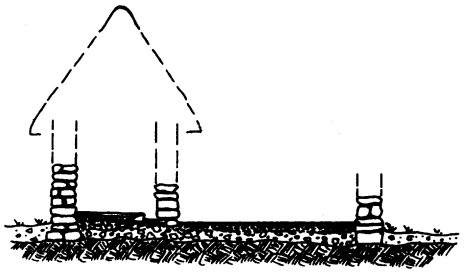




Section A-A

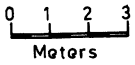


Plan



Section B-B

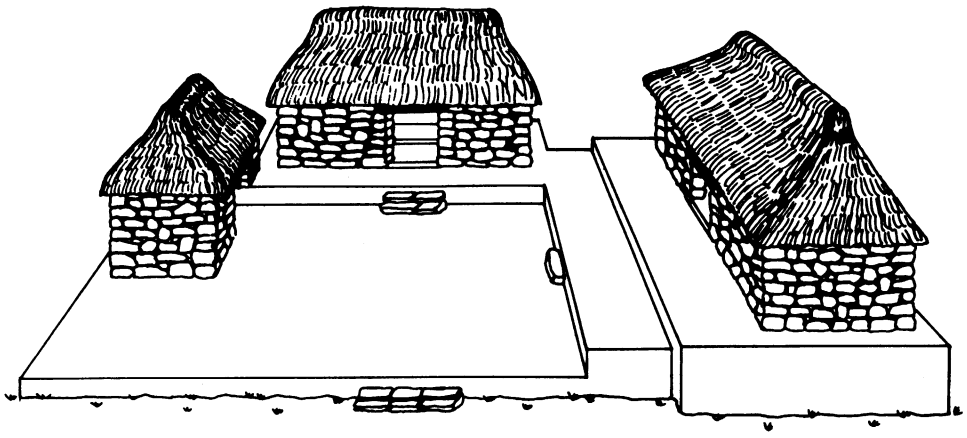
OPERATION 17 C-D-E-F
House complex at Km.158.2
East of Xpuhil

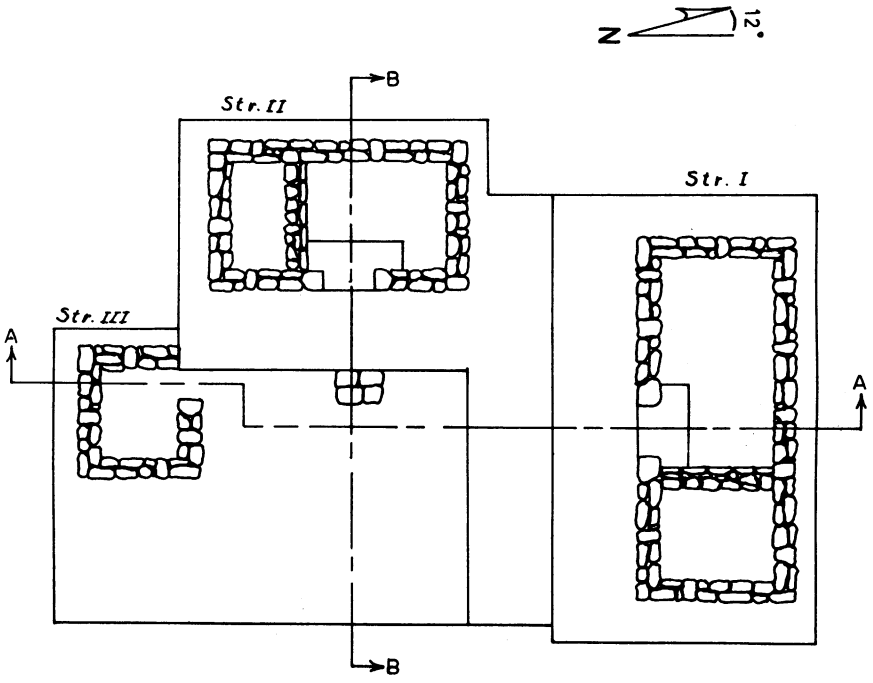


Campeche, Mexico

Jack Eaton
April 16, 1973

Figure 5





PLAN

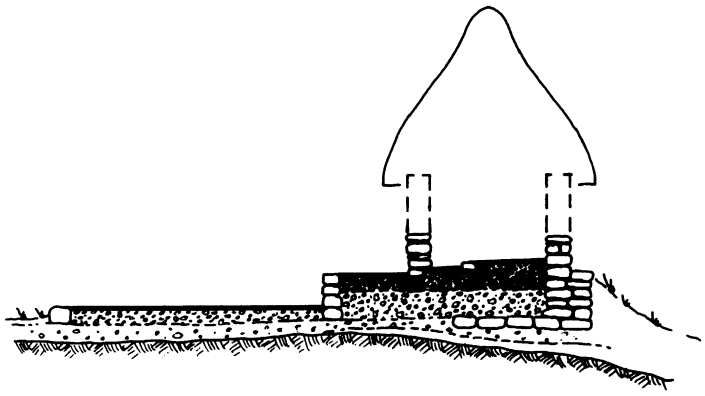
OPERATION 21 A, B, C
House complex at Km. 154.5
East of Xpuhil

0 1 2 3
Meters

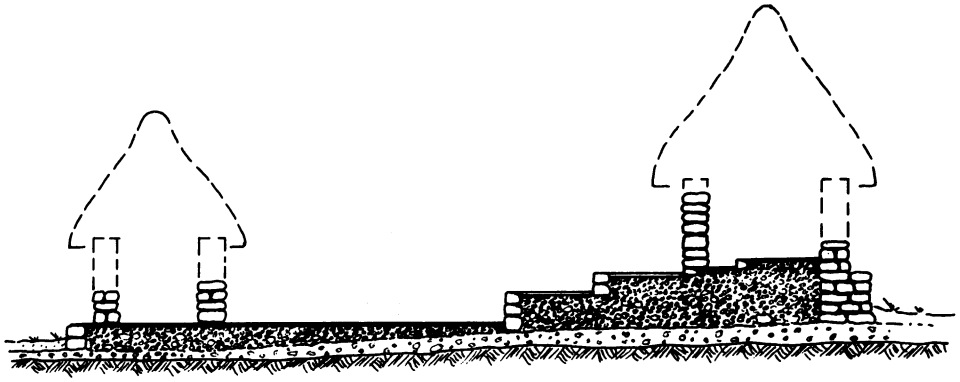
Campeche, Mexico

Jack Eaton
May 1 1973

Figure 6



Section B-B



Section A-A

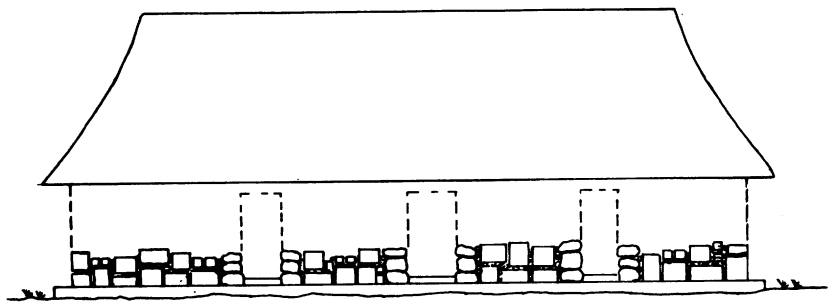
OPERATION 21 A,B,C
House complex at Km.156.5
East of Xpuhil

0 1 2 3
Meters

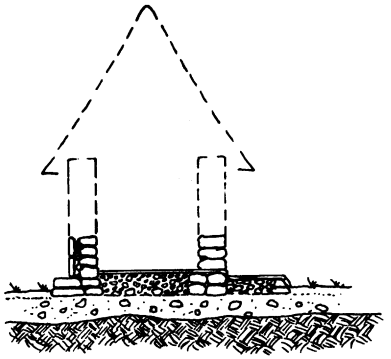
Campeche, Mexico

Jack Eaton
May 1, 1973

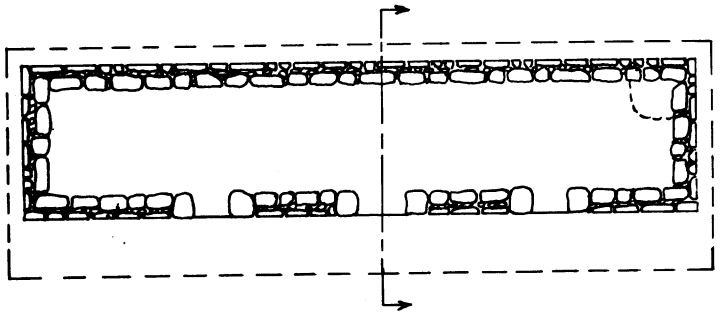
Figure 7



Elevation



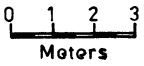
Section



Plan

OPERATION 21 D
House at Km.156,5
East of Xpuhil

Campeche, Mexico



Jack Eaton
May 2,1973

Figure 8

REFERENCES

Adams, R.E.W.

1970 Suggested Classic period occupational specialization in the southern Maya lowlands. In Monographs and Papers in Maya Archaeology, Vol. 61, pp. 489-502. Peabody Museum, Harvard University.

1974 Preliminary Reports on the Archaeology of the Rio Bec Region. Middle American Research Institute, R.E.W. Adams ed., Tulane University publication.

Ball, Joseph W.

1972 Ceramic Sequence at Becan, Campeche, Mexico. Second (final) Preliminary report: 1972. Ceramica de Cultura Maya, et. al., No. 8, pp. 34-40. Philadelphia.

1973 Ceramic Sequence at Becan, Campeche, Mexico. Ph. D. dissertation, University of Wisconsin, Madison.

Culbert, Patrick T.

1973 The Classic Maya Collapse. P.T. Culbert, ed. University of New Mexico Press.

Eaton, Jack D.

1972a Chicanna: an elite center in the Rio Bec Region. Paper for the annual meeting of the Society for American Archaeology, Miami.

1972b A report on excavations at Chicanna, Campeche, Mexico. Ceramica de Cultura Maya, et. al., No. 8, pp. 42-61. Philadelphia.

Ms.1972 Some Notes on Archaeological Reconnaissance in the Rio Bec Region. Ms. in preparation for Middle American Research Institute, Tulane University publication.

1974 Chicanna: an elite center in the Rio Bec Region. In Preliminary Reports on Archaeological Investigations in the Rio Bec Area, Campeche, Mexico. Middle American Research Institute, Tulane University Publication 31, New Orleans.

Ms. 1974 Chicanna, Campeche, Mexico. Ms. in preparation (final report) for Middle American Research Institute, Tulane University publication.

Morley, Sylvanus G.
1946 The Ancient Maya. Stanford University Press.

Pollock, H.E.D.
1965 Architecture of the Maya lowlands. Handbook of Middle American Indians, Vol. 2, pp. 378-440. University of Texas Press, Austin.

Proskouriakoff, Tatiana
1965 Sculpture and Major Arts of the Maya lowlands. Handbook of Middle American Indians, Vol. 2, p. 491. University of Texas Press, Austin.

Ruppert, Karl and J.H. Denison
1943 Archaeological Reconnaissance in Campeche, Quintana Roo, and Peten. Carnegie Institution of Washington, Publication 588. Washington.

Sanders, William T.
1973 Cultural Ecology of the lowland Maya: A Reevaluation. The Classic Maya Collapse, edited by T. Patrick Culbert. University of New Mexico Press, Albuquerque.

Smith, A. Ledyard
1950 Uaxactun, Guatemala: Excavations of 1931-1937. Carnegie Institution of Washington, No. 588. Washington.

Turner, B.L.
1973 Prehistoric intensive agriculture in the Maya lowlands. Ms. in preparation.

Wauchope, Robert
1938 Modern Maya Houses, A Study of their Archaeological Significance. Carnegie Institution of Washington. Publication No. 502. Washington.

Webster, Helen T.
1963 Tikal Graffiti. Expedition, Vol 6, No. 1, Fall 1963, pp. 36-47. University of Pennsylvania.

Willey, Gordon R. and William R. Bullard
1965 Prehistoric Settlement Patterns in the Maya lowlands. Handbook of Middle American Indians, Vol. 2, pp. 360-377. University of Texas Press, Austin.