

BECAN

LATITUDE 18° 30.6' N.

LONGITUDE 89° 28.4' W.

The ruins of Becan were first reported to Carnegie Institution January 11, 1934. The Third Campeche Expedition reached the site February 20, 1934, and remained there until March 5.

Leaving Rapido (see Uaabal) at 8:05 in the morning, the expedition passed San Martin (see Oxpemul) at 9:25, and 20 minutes later took a side trail to the north, leading to the aguada of Largarto. Not over 45 minutes from this water hole are the ruins of Tres Marias, visited May 21, 1933 (Ruppert, 1933, p. 91). This is a small site having no standing buildings and only one plain stela (1.94 m. long, 54 cm. wide, 25 cm. thick) and a round altar (95 cm. in diameter, 45 cm. high). There is a small section of vault exposed; the stones show no special working.

Approximately 4 km. beyond Tres Marias is an aguada, bearing the same name, where camp was made for the night. Between here and the ruins, and usually surmounting the crests of hills, are many small, artificial mounds. They are outlined by large, unworked stones, are irregular in shape, vary in size, and have a height of 1-2 m. One, an oval, is about 4 by 3 m. and 1.50 m. high. The mounds do not seem to be arranged with particular care, although they appear to enclose small yards and courts. Similar mounds were noted approximately a league from Central Buenfil on the La Fama trail.

The following day the expedition moved on to San Lorenzo, a distance of eight leagues, passing through San Felipe. The latter is said to be halfway between Rio Desempeño and San Lorenzo, and if so these camps are 14 leagues apart. The Rio Desempeño-San Lorenzo trail was at one time kept open and much used, but was now so overgrown that in places it could not be discerned. The distance from San Lorenzo to Carmelita is reported to be 10 leagues. Travel was extremely slow owing to the absence of trails so that, after passing the aguada of Corozal, camp was made at Pasadita (the trail to Hormiguero is between Corozal and Pasadita). Branching from here to the north is the trail to Carmelita along which are the aguadas of Ramonal, Buenos Aires, San Roman, and Advertencia. The aguada of Carmelita, one of the largest seen by the expedition, has on its north side a heavy stand of ramon which

furnished food for the mules and made a pleasant campsite.

The name Becan, a Maya word meaning "ravine or a canyon formed by water," was given to the site by the Third Campeche Expedition because of the moat that surrounds the city. The ruins, about .5 km. north of the aguada, stand on rather flat ground—at most, not more than 18 m. above the aguada level. Because of the dense bush which cuts off the view in all directions, it is difficult to determine the topography of the surrounding terrain. From the top of the highest mound only low ridges are seen rising above the undulating plain. The men pointed out the direction of Aguada Carolina, claiming it lay two leagues to the north. Aguada Carolina is shown on maps of Campeche as being 15-20 km. long and much farther north. In 1938 the expedition came to the aguada from the northeast and found it to be latitude 18° 34.1' N., longitude 89° 27.7' W., neither located nor so large as shown on the maps.

Becan is of particular interest because it is surrounded by the above-mentioned moat (pl. 68). The city, so outlined, is somewhat kidney-shaped, with the long axis northwest and southeast. The greatest length is 550 m. and the greatest width 437 m. The total length of the moat is slightly over 1730 m. (1.075 mi.). It was obviously dug in the shallow soil and limestone, and at no point appeared to be natural; it is now partially filled with silt and humus. As only superficial trenches were made at Causeways II and III, the construction is not fully known, but it was not masonry-lined and there is some question as to whether or not it was completed. Water would quickly seep through the porous limestone unless it was plastered or impregnated with silt, as must be the case in natural aguadas. The great quantity of stone removed in its excavation was no doubt used in the construction of the city.

The moat varies in width from 3 to 25 m. and in depth from 2 to 4 m., the depth remaining fairly constant in relation to the configuration of the land. As the terrain slopes gently upward to the west, the level of the base of the moat rises until, near Causeway III, it is 5 m. higher than where it joins the swamp (between Cause-

ways V and VI), from which it might have been supplied with water. The irregularity in the level of the base of the moat (if such it was) and the apparent in-

completeness of some of the causeways, as they lack means for water to pass under them, suggest that the construction may not have been completed.

CAUSEWAYS

Seven causeways spaced at irregular intervals span the moat. The width of each was measured at the top, the height at the center; these measurements were probably considerably greater before the causeways had been worn down by weathering.

I: length 13 m., width 3 m., height 2.50 m. Some worked stones on the sides of the causeway suggest that it may be partly artificial (pl. 19a).

II: length 13 m., width 3 m., height 2 m. A small amount of excavating in the center of the north side showed that it was built of large irregular blocks. Some facing stones in position are only roughly squared and surfaced (pl. 19b).

III: length 12 m., width 4.50 m., height 4 m. A trench on the north side showed this causeway to be of natural limestone, which was not cut away when the moat was dug (pl. 19c).

IV: length 17 m., width 3 m., height 4 m. The central portion has caved. The tongues projecting inward from either side are of natural limestone (pl. 19d).

V: length 15 m., width 3 m., height 2.20 m. It is made of natural limestone. A section, 3 m. long in the center, is missing; it may have been of limestone now broken down, or may have been spanned by a wooden bridge.

VI: length 17 m., width 3 m., height 2.50 m. It is made of natural limestone, in part at least, and is broken down on the city side. There is a sharp descent (1.75 m.) from this side to the causeway level.

VII: length 16 m., width 4.50 m., height 2 m. It is

much weathered and, as excavations were not undertaken, the nature of the construction is unknown.

North of the city lies a *bajo* or swamp, formerly the lake which furnished water for the moat. The moat at this point is on a level with the *bajo*. As the lake has filled with silt, forming the *bajo*, so also has the moat silted up. C. W. Cooke (1931, pp. 286-87) suggests that the *bajos* were once lakes:

How long ago these ancient lakes became filled with silt and converted into *bajos* can not be determined precisely. Doubtless the process was continuous and gradual although there may have been times when silting was more rapid than at others. Silting is still going on but probably very slowly because the uplands from which the silt is derived are thickly forested. It is quite possible that the transition from lake to *bajo* may have occurred during the time of the Mayan Empire, when much of the uplands must have been under cultivation. The Mayas were an agricultural people and needed much cleared land to raise the great quantities of corn required to feed their large population. The rate of erosion of the soil must have been enormously accelerated when the forest was cut and the cultivated soil was exposed to the full force of the torrential rains. One may imagine the Petén when first occupied by the Mayas to have had a thick fertile black soil. During the many centuries of the Mayan occupation more and more of the soil was washed away until the bare limestone was exposed. Then the land was abandoned and reverted to jungle, soil erosion was greatly retarded, and today, after the lapse of several centuries, the ground is covered by a thin but fairly even coating of black clay through which the rock still shows in many places. Soil is probably being formed now more rapidly than it is being washed away.

CITY

The city is rather compact, but it had not been laid out with the same regularity as had Balakbal. Notwithstanding its shape, as outlined by the moat, the structures themselves are oriented with care. They are roughly arranged in three groups: one along the eastern side, a second north-central, and the third to the west. The first contains some of the largest single buildings as well as the highest pyramid (Structure IV). The north-central is made up of Structures X, XI, and XII and many large, unnumbered mounds. On the western side of the city is a large group collectively called Structure

XIII. A series of low mounds (not shown on the plan), 1-3 m. high, lines the inner bank of the moat; in places these are clearly seen to be the remains of structures.

EAST GROUP

In this group are eight or nine large structures and numerous small mounds, of which Structures I-V stand on a great terrace rising 4-7 m. high. The first four structures form a quadrangle in the southern part of the terrace.

STRUCTURE I, on the south side of the quadrangle, consists of two levels of two parallel ranges of chambers, the second level rising above and north of the roof of the first, plus a solid masonry mass carrying two masonry towers which rise behind the second level (fig. 67). In front (south) of the lower range of chambers is a large platform approximately 1 m. high. At the eastern end of a definite offset in the south line of the platform are four small piles of unworked, weathered stones.

Excavations in the lower level of rooms would give the complete floor plan, but now their arrangement is hidden by the debris. Its distribution indicates that the length of the two parallel ranges of rooms was approximately the same as that of the low platform to the south; the width was about 6 m., and there were possibly seven rooms in each range.

Sections of the back wall and vault of the inner range of lower level of rooms were found intact. The line of this wall is 65 cm. out from the façade of the rooms of the upper level. No more than six courses of stones forming the north soffit of the vault, which rises at an angle of 55°, were found *in situ*. The spring line is 2.10 m. below the floor of the upper level of rooms. The faces of the vault stones are small (7 by 18 cm., 6 by 16 cm., and 6 by 12 cm., with tenons averaging 27 cm. long), poorly dressed, and curved on the exposed face. Some chinking with small stones was seen, but less than in the rooms of the upper level.

As the floor was covered with debris the height of the wall is not known. The only measurement available for either of the two ranges of rooms is that of the east wall of the west room in the inner range, which has a thickness of 1.14 m. The plan of the second level of parallel chambers can clearly be made out. The two ranges of rooms have a total width of 6.50 m. and there are five rooms in each range. Each of the five rooms in the outer (south) range was entered through three doorways, which varied in width from 1.50 to 2.64 m. In no place does the façade stand more than a meter high. The only decorations remaining are the bases of four engaged columns, made of carefully worked small stones, heavily covered with plaster (fig. 67a).

To judge from portions of remaining doorjambs, it is surmised that passage from the outer to the inner range of chambers was by a single doorway in each room.

Room 7. The masonry of the wall and vault of Room 7 is described since it is the best preserved. That of the wall is of poorly dressed stones, the faces of some measuring 15 by 33 cm., 19 by 43 cm., 14 by 34 cm., laid in regular courses with much chinking. The wall has a vertical height of 3.59 m., whence the north vault soffit rises 1.45 m. at an angle of 65°. The vault stones

are similar in shape to those used in the chambers of the lower levels, and there are nine courses from the spring line to the capstones. Some of the latter, found *in situ*, have a span of 59 cm. The distance from the soffit of the capstones to the roof of the chamber is 52 cm. Two beam holes were observed in the north wall at the level of the spring line: the first is 14 cm. from the west wall; the second, 4.15 m. from the first.

Behind (north of) the upper level of rooms and resting on the east terrace is a great mass of apparently solid masonry. Rising from either end of this is a tower. Since the towers were probably similar, and the one to the west is the better preserved, it alone will be described. Much of its facing has fallen; however, remaining sections show it to have risen in four zones with rounded corners composed of small brick-like blocks cut with a curve as on the towers of Rio Bec, Group I, Structure XI (pl. 7b). Each zone carries a plain molding at the base and top. The facing stones of the sides extend about 4 m. inward from the corners of the first zone, at which point there is a definite cleavage extending vertically upward. This central area on each of the four sides is 5.50 m. wide and, no doubt, carried some form of decoration. The towers are somewhat suggestive of those at Hormiguero, Structure II (pl. 11a) and Rio Bec, Group I, Structure XI (pl. 6c).

An examination of the top of the towers showed four rows of four depressions each. As they are all shallow and filled with vegetation little may be said as to their purpose. It is possible that the depressions are from the collapse of material above large vertical shafts, which were built in the towers to reduce the amount of fill material and consequently decrease the weight of the masonry mass.

STRUCTURE II lies on the west side of the quadrangle. It is in a poor state of repair and only occasional walls can be seen. The structure, a great pyramid, 43 m. square and 14 m. high, had two parallel ranges of chambers extending around three sides of its base; the fourth side (south), now a mere talus, may also have had two parallel ranges of rooms. The interior masonry of the chambers is of large, rectangular blocks roughly pecked and much weathered. No vaults were found intact. There may have been a temple surmounting this pyramid as a large amount of debris was noted on the summit; however, no stairway to it was apparent.

On the west side a stairway about 16 m. wide, now in ruin, rose from the base of the terrace to the rooms at the foot of the structure. A small mound parallel to and lying 11 m. west of the base of the stairway was at first thought to represent the west range of a ball court of which the stairway itself formed the east range.

An examination of the mound showed that it lacked the characteristic slope of the bench. Excavation would be necessary to determine its true nature and relationship, if any, to the stairway. (The Red House Ball Court at Chichen Itza was not recognized until 1931. The east range had previously been considered an independent structure and the west range as debris accumulated at the east base of the Red House.) At the point marked X on the plan of Structure II (pl. 68) an elongated stone worked with a groove, perhaps once serving as a spout, was incorporated in the fill.

STRUCTURE III. The east side of the plaza is defined by Structure III, a mound 52 m. long and 4.50 m. high. Near the southern end of this mound and to the west is a small platform 6 m. square and not over 1 m. high.

STRUCTURE IV, defining the north side of the quadrangle, is a pyramid, some 34 m. square at the base, supporting a building. The stairway on the south, 17 m. wide, is fairly well indicated by the lower treads and must have risen at an angle of approximately 54°. Any portion of the pyramid facing that may be in position is now covered with debris fallen from above.

The rear (north) section of the building on top of the pyramid rises in two levels (fig. 68). The front section is unusual in that it contains a court surrounded on three sides by chambers; the fourth side (south) is closed by a wall. The nearest approach to this plan was seen at Calakmul, Structure III. Structure 18 at Tikal (Tozzer, 1911, p. 116, fig. 28) is also built around three sides of a small court, but the fourth side is open. Structure F at Nakum (Tozzer, 1913, p. 171, fig. 57) is similar but simpler in plan, having only a single range of rooms on the three sides of the court. Temple N at the same site, less comparable as the two wings of the court are distinct structures and at a lower level than the main building, may be a transitional form. The third level of the principal building at Santa Rosa Xlabpak has a portal arch forming one side of an open court associated with a structure surmounting a pyramid (Spinden, 1913, p. 102, figs. 142 and 143; also Seler, 1916, p. 63, fig. 56a-c).

Little of the south façade of Structure IV is standing. On either side of a single doorway leading into the court are the remains of great masonry pilasters which now rise not over 80 cm. and bear traces of plaster decoration. Although the west end of this façade is in a much better state of preservation than the east, both show a setback which in the former is 75 cm. deep and about 2 m. long. In the corner formed by this setback (pl. 20a) is an opening, 70 cm. wide by 1.50 m. high (fig. 69), which gives access to a covered stairway leading inward and down. Five treads below the entrance

there is an irregularly shaped landing. Descending from this landing at its northwest corner is a second flight of stairs which spiral westward and down. The final point of exit, now destroyed (pl. 20c), was perhaps at or near the base of the pyramid.

A masonry block in front (south) of the opening for the stairway in the façade of the building is 1.03 m. long, 88 cm. wide at present (its south face having fallen), and 58 cm. high to its existing upper limits. There are indications to suggest that at one time the masonry block rose as a column to a height of 3.78 m. because portions of an eight-course vault rest on the façade of the building at this height and in line only with the masonry pier. Vault stones rising from this pier may have joined those from the façade of the building and thus formed a roof over the entrance to the stairway. Thus due to the offset in the façade of the structure, the west end of the vault had a width of 1.56 m. and the eastern 33 cm. of the vault, a width of 81 cm., the vault in the latter section probably not rising more than 30 cm. above the spring line (fig. 69).

The inner walls of the court show two inset ornamental stone-mosaic panels on each of the east, north, and west sides. The south panel in the east wall is shown in figure 70 and plate 20b; the decoration in the others is similar. Above the panel is a plain zone supporting an apron molding. The latter, suggested from portions *in situ* south of the panel and its absence on the south wall, probably extended around the three inner faces of the court.

Traces of a stairway were not noted on the west side of the pyramid although a single doorway (from Room 1) opens on this side. Remains of stone and plaster decoration on the west façade north of the doorway (pl. 20c) indicate that a considerable portion of the exterior was so ornamented.

Room 1. The floor of Room 1 is 95 cm. higher than the floor of the platform on the south exterior of the building. As the west side of the building has fallen, no step was seen in front of the doorway nor is a podium indicated. The wall rises vertically 2.50 m. to the spring line of the vault, which is 35 cm. below the vault stones noted on the south façade. A section of the east vault soffit at the north end of the room, rising at an angle of 60°, is standing to a height of 1.50 m.; 11 courses of stones are *in situ* (pl. 21a).

Room 2 has its spring line 4.20 m. above the floor of the court. Although no excavations were made to locate steps from the court into Room 2 or from this room into Room 1, the floors were doubtless on different levels.

Room 3. The spring line in Room 3 is 55 cm. higher

than the base of the overhanging apron molding above the mosaic panels of the court.

Room 4. Little remains of this chamber, most of its walls having fallen down the eastern slope of the pyramid. The floor here, as in Room 1, is 95 cm. above the floor of the south exterior of the building and the vertical walls rise 2.58 m.

Rooms 5, 6, and 7 extend across the north side of the building. Entrance to Room 6 was probably from the court and to Rooms 5 and 7 from the north, although this is not definitely known, for the chambers are ruined and almost filled with debris.

Room 5 is irregular in shape due to an inset at the northwest corner corresponding somewhat to those noted on the south façade. The south vault soffit rises at an angle of 57° with 10 courses of stones to a height of 1.45 m. (pl. 21*b*). In the west wall, 1.15 m. from the southwest corner of the room and 20 cm. above the spring line, is the south side of a ventilator; its north side has fallen. In the section of the south vault soffit now standing is a beam hole in line with the spring of the vault and a few centimeters from the west wall. A beam hole in the south wall is 41 cm. below the spring line and 27 cm. from the southwest corner.

The west end of Room 5 shows the architectural ingenuity of the Maya. The lower part of the west wall extends to within 53 cm. of the south side of the room, where it turns westward and, with the projected south wall, forms a recess 53 cm. wide by 1.70 m. long. The upper part of the west wall has been made continuous and closes the vault of the chamber. Two stone slabs placed 54 cm. below the spring line of the vault span the entrance of the recess and support a tie-wall 70 cm. deep (fig. 71*c*). On the recess side the tie-wall rises vertically 1.45 m. to the capstones, which have a span of 33 cm. The south wall of the recess rises vertically; the north slopes slightly inward from base to top. Wall stones are used to face the vault of the recess which rises on the north and south at angles of 85° and 87° respectively (pl. 20*c*). At a point 1.70 m. below the stone slabs supporting the tie-wall, the plaster curves outward from the wall. An earlier layer of plaster continues downward and was traced to the debris filling the room.

Rooms 6 and 7 yielded no data.

Rooms 8-11 (fig. 72) lie beneath Rooms 5-7.

Room 8. The vault springs at a height of 2.10 m. above the floor, rises 70 cm. to the capstones, and is formed of six courses of stones rising at an angle of 53° on the north and 58° on the south. It also slopes inward at the west end of the room, where the angle is 57.5° and only five courses of stones are used. The masonry of the walls is of relatively large blocks, crudely

worked and pecked. Traces of plaster were seen. The vault stones, varying from 15 cm. to 50 cm. in length, show little working (pl. 21*c*). The capstones are fairly flat on the under side and have a span of 40 cm.

There were originally two openings in the south wall of Room 8: one for the stairway leading to the court and the other, a masonry-blocked doorway at the extreme west end of the room. The stairway ascending from Room 8 has its exit in the northwest corner of the court (pl. 21*d*). It consists of nine steps, the first being a small platform the width of the room and extending 1.55 m. out from the east wall (pl. 21*c*). The second step, rising from this platform, is on the same plane as the floor of Room 9. From this level seven risers complete the stairway which leads to the court through a doorway (pl. 21*d*) 82 cm. wide by 1.85 m. high. The walls of the stair-passage rise vertically 1.35 m. above the level of the spring line of the vault of the room, to a single course of vault stones which support the capping blocks. The two blocks at the south end are stepped upward (fig. 72*c*).

A niche in the north wall, 1.08 m. above the floor, measures 37 cm. wide by 47 cm. high. The depth could not be determined as the exterior portion of the wall has partially fallen. There is a single doorway in this same wall near the northwest corner. At the top of the east jamb two vault-like stones project to support the lintel, 36 by 88 cm. The lintel stone is only roughly worked and much resembles a capping block from the vault (fig. 72*a*). The doorway apparently gave into a stair-passage leading down to one of a series of rooms parallel to, and on a still lower level than, Rooms 8-11. The spring line of the westernmost room on this lower level is 70 cm. above the floor of Room 8, and its south wall is 2 m. north of Room 8.

A bench built in at the west end of Room 8, its eastern edge in line with the west jamb of the north doorway, is of masonry and carefully plastered. In the top of the bench and opening through the blocked doorway in the south wall is the orifice of a shaft, measuring in section 17 by 18 cm., which leads downward and to the west.

A doorway (pl. 21*c*) in the east wall opening into Room 9 has a single stone lintel, 46 cm. long, which is supported by a stone projecting 5 cm. from either jamb.

Room 9. The floor is finished with very hard packed, untinted lime plaster. Beneath this is 49 cm. of loose fill resting on an unfinished floor, which is on the same level as that of Room 8. There is a niche in the center of the east wall, and a portion of the upper section of the facing of the same wall near the southeast corner of the room has been torn out. The walls rise 1.82 m. and the vault, formed of four courses, rises 71 cm. to

the capstones, at an average angle of 55° . The spring line is 46 cm. lower than in Room 8. The north vault soffits in Rooms 9 and 10 are probably continuous, as the wall dividing the two chambers, 1.90 m. thick, is built against the vaults and the side walls.

Room 10. Rooms 10 and 11 are very similar to Rooms 8 and 9 in size, arrangement, and general construction. The doorway in the east wall of Room 10 has a single stone lintel 23 cm. thick, supported by steps or corbels projecting 5 cm. from either jamb. The stairway and passage between the two rooms leading upward to the court is filled with debris so that a complete study of it could not be made (fig. 72).

Room 11. The eastern 1.61 m. have been increased in width by an extension of 30 cm. to the north. A doorway in the north wall of the extension has a stone lintel which is on a level with the spring of the vault. On the west side the lintel is supported by two corbels, the upper projecting 5 cm. beyond the lower. The north side of the doorway has fallen. A niche is suggested in the wall to the west of the doorway but due to the condition of the wall and the debris which fills the lower part of the room no measurements were obtainable. West of the niche is another opening, 60 cm. wide, the base of which is only 89 cm. below the spring of the vault. In the opening are three masonry steps, probably the remains of a series which led upward and to the north, perhaps at one time giving onto the roof of the range of chambers lying north of and below Rooms 8-11; the outer portion of the stair-passage is now broken away. Some adjustment had been made in the vault of the chamber in line with the opening, for here the south side of the vault has been extended upward 42 cm. to a capstone which has its long axis at right angles to those of the room (fig. 72c).

A vaulted blocked doorway in the south wall has its eastern limit defined by the east end of the room. An exterior examination of the east and west sides of the pyramid showed no chamber into which either it or the corresponding blocked doorway in Room 8 may have led. The masonry of the wall and vault of Room 11 is similar to that in Room 8; the vault slopes inward at the east end of the chamber at an angle of 50° .

On the same terrace with the quadrangle formed by Structures I-IV is a small group of low mounds lying to the northwest of Structure IV. The first of these to be encountered as one leaves the quadrangle by way of the passage between Structures II and IV, is 20 m. long (east and west) and has a southward projection near its west end; this mound is not numbered on the map.

STRUCTURE V. North of the above-mentioned mound

lies Structure V, in front of which stood Stela 4. The structure, with a stairway on the west, is a low, irregularly shaped mound on which, unquestionably, stood a building. In the angle at the base of the terrace, north of Structure IV and east of Structure V, is a series of chambers almost completely collapsed and covered with debris so that no details of construction could be noted.

A vaulted passageway having its entrance in the west face of the terrace south of Structure VI, extends eastward some 17 m. Beyond this point, as though the passageway had not been completed, there is an irregular depression extending to the eastern edge of the terrace. The passage is 1.70 m. wide; the vertical wall rises 1.92 m. and the vault, an additional 1.88 m. to the capstones, which have a span of 35 cm. It is approximately 30 cm. from the under side of the capstones to the roof. The masonry is mixed; some stones are carefully worked, others only roughly pecked, and the vault made of large slabs roughly blocked out. A niche in the south wall of the passage is 1.75 m. deep, 96 cm. high, and 60 cm. wide. The side walls are lined with large, crudely worked stones; the back wall is of natural limestone.

STRUCTURE VI. North of the great terrace and rising independently of it is Structure VI, a flat-topped pyramid 9.70 m. high. No stairway could be found. A single range of collapsed chambers was discernible at the north base. On the flat top of the pyramid, outlining three sides, are a number of small mounds; on the fourth (south) side is a single mound 3 m. high. No standing walls were seen.

STRUCTURE VII, at the east base of Structure VI, rests on a platform averaging 3.50 m. high with the long axis east and west. The building, approximately 48 m. long, was composed of seven chambers, some of which are partly standing. The rooms have average width and length of 2.50 m. and 7 m. respectively. A small section of the vault at the west end of Room 3 was found *in situ*. Beam holes appearing at the spring line in the south soffit of the vault are 15 cm., 2.15 m., and 5.55 m. from the west wall. The holes average 15 cm. wide by 18 cm. high; the middle one has a depth of 45 cm. It is interesting to note that the spring line on the south is 31 cm. higher than on the north; due to this difference the beam holes on the latter side are in the vertical wall of the chamber. The masonry of the exterior north wall is of carefully worked blocks, their faces averaging 15 by 20 cm., laid in regular courses with practically no chinking. The interior masonry is of large stones, less carefully worked, and irregular in size. The vault stones are similar to those in Structures I and IV.

NORTH-CENTRAL GROUP

STRUCTURE VIII. Abutting the east half of the north side of Structure VI rises Structure VIII, a great pyramidal substructure supporting a building. It measures 34 by 58 m. at its base and rises 24 m. above the terrace. The stairway was apparently on the west side, although only fragmentary evidence now remains. The ground plan is best understood by an examination of figure 73. The west façade is almost entirely fallen or covered with debris. However, portions of two rounded corners and the certainty of two others, composed of small stones cut with a curve, suggest in part the exterior decoration.

Room 7. The south end is probably standing to the original level of the capstones, although none was found in position. The jambs of the doorways between Rooms 1 and 3 and Rooms 3 and 7 show very unusual construction. As the south side of the latter is in better repair, description is limited to it (cf. Rio Bec, Group V, Structure IV, pl. 10*b*), and Culucbalom, Structure I, pl. 43*a*). The jamb is 1.18 m. from the south wall of the chamber; the jamb and the contiguous wall, for a distance of 85 cm., rise vertically 61 cm. above the spring line of the vault (pl. 22*a*). It may have risen higher but is now broken away above this point. The contiguous section of vault rises 1.70 m. above the spring line to what may have been the level of the capstones, although in Room 4 the capstones are 30 cm. higher. Each course of the vault is formed by a single stone 33 cm. long, which is carefully worked and finished on the exposed side as well as on the beveled face, the latter surface being so cut that the vault rises at an angle of 67°; the top and bottom of each stone are parallel. Precisely how the vault was carried across the room is not definitely known but it was presumably done in the same manner as in Structure I at Culucbalom (fig. 115*b*, pl. 43*a*), where the two sections of vault rise at different angles and meet at the height of the capstones. (A similar treatment was reported from Campeche by Pollock in 1936 at Dzibiltun, Palace, east room; and from Xtampah, Palace, center, south room. See also Rio Bec, Group V, Structure IV.) The masonry of the jambs consists of large blocks, measuring 42 by 21 by 42 cm. and 74 by 14 by 22 cm., once carefully worked but now much weathered.

Room 4. Access to Room 4 was through a single doorway in the east wall. The height of the doorway could not be determined, for the lintel, presumably of wood, and the upper limits of the jambs have long since fallen. At the south end of the chamber the vertical walls rise to a height of 3.75 m. The vault continues 2 m. with 13 courses of stones, at an angle of 65° from the

horizontal, and is closed by capstones which have a span of 58 cm. Wooden poles extend across the vault; one, now badly weathered, was found *in situ* 21 cm. from the south end wall and 38 cm. above the spring line. The location of another is indicated by a hole in the west vault at the same level and 3.33 m. from the first. There is no offset in the masonry at the spring line, but a section of plaster remaining on the west wall (pl. 22*b*) shows a simple molding at this level. There is no offset in the masonry or plaster of the end wall (pl. 22*c*).

Room 6. No jambs of an east doorway are visible, but the contour of the debris and the absence of any other entrance to this room or an exterior entrance to Room 4 would indicate that a doorway did exist here. The masonry of the interior walls is of irregular-sized stones, whereas that of the exterior, as seen on the east side of the structure, is of small, uniform stones worked with the same precision as those found in Rio Bec, Group I, Structure XI (pl. 7*a*).

Rising from the top of the pyramid and incorporated with the building at its southwest and northwest corners, are great masonry towers; the one at the southwest, the better preserved, overhangs Room 4 by 30 cm. (fig. 73). At the level of the roof of Room 4 the tower measures approximately 3.70 by 11.50 m. and rises in three zones measuring, respectively, 1.50 m., 1.48 m., and 2.50 m. The final zone rose as a wall 1.40 m. wide, of which now only small sections showed faced stones. A steep regular slope on the west side of the tower may be the remains of an ornamental stairway.

STRUCTURE IX, lying northwest of Structure VIII and rising 32 m. above the terrace, is the highest pyramid in the city. It, with a long mound to the west, bounds the north side of the Central Plaza; Structure X, the west; a single mound 22 m. high by 30 m. square, the south; and Structure VIII, the east. A stairway, now in ruins, on the south side of Structure IX rose at an angle of approximately 51°. The acclivity at the top of the pyramid seems to indicate a superstructure, of which, however, no walls are visible. Stela 3 stands at the south base of this pyramid.

STRUCTURE X, on the west side of the Central Plaza, is an elaborate and involved complex, having its long axis north and south. At either end there is a court presumably surrounded by chambers. The central portion of the structure is a platform rising 14 m. above the plaza, with a stairway, about 11 m. wide, on its east side. The building on this platform is made up of two parallel ranges of three longitudinal chambers (fig. 74). The east or main façade is pierced by three doorways, one opening into each of the three front rooms.

Little now remains of the façade but it carried stone and plaster decoration, on which there is still some red paint. The greatest depth of the relief is 26 cm. (pl. 23a).

The decoration extends for 4.80 m. north of the central doorway; then there is a 73-cm. plain area followed by a 1.97-m. decorated area. The façade south of the central doorway is treated in the same manner. There is much similarity in this decoration to that of Rio Bec (pl. 8d) and Hormiguero (pl. 11a).

Room 2, the central chamber on the east side, the most intact, varies in width from 1.60 to 1.70 m. and has sections of the vault *in situ* at either end. The spring line is 3.20 m. above the floor and the vault of six courses rises 90 cm. at an angle of 56°, to the capping blocks which have a span of 42 cm. The roof of the building, only 50 cm. above the under side of the capstones, possibly once carried a roof comb. The elevation of Room 2 (fig. 75) shows two ventilators opening through the stucco decoration of the façade. The doorway in this wall is 2 m. wide and is now broken down to a point 1.20 m. below the spring of the vault; if, as appears, this was the location of the lintel, the doorway was 2 m. high.

At the base of the west wall of the chamber (fig. 75) is a molding 13 cm. high by 3 cm. thick. The west doorway (opening into Room 5) was spanned by five wooden beams of which only four are now *in situ*. They are semicircular in section, except for those at either side which have the exposed face uncurved, have an average diameter of 24 cm. and average length of 3.70 m. A section of the westernmost beam was removed and sent to W. S. Stallings at the Laboratory of Anthropology, Santa Fe, New Mexico, for examination. His report follows:

Though I am not familiar with tropical woods, there is very little doubt but that the structural timber from the ruin of Becan is *Achras zapota* L., the dense, durable hardwood known as sapote, sapodilla, or, to the Maya, as *ya* or *zac-ya*. The identification is based on a comparison of the specimen with the samples from four species of living trees which you collected in the same locality: the sapote, *Achras zapota* L.; the *ramón*, *Brosimum alicastrum* Sw.; the *chacah*, *Bursera simaruba* (L.) Sarg.; and the chimtok, which Roys ["The Ethno-Botany of the Maya," 1931] believes to be probably *Krugiodendron ferreum* (Vahl) Urban. As you know, tropical woods in general appear to hold small promise of lending themselves to dendrochronological methods, though the question as to whether the techniques of the study can be extended to a successful application in certain cases has yet to be thoroughly examined. The specimens from Becan are not encouraging. Subject to your wishes in the matter, the specimens are deposited in the Laboratory of Anthropology where they will be available to interested parties.

Room 5. Only sections of the north and south walls and the entire east wall, with four courses of the vault, are in position (pl. 23b). In the east wall of Room 1, 10 cm. from the north wall and 1.40 m. below the spring line is an opening through the wall measuring 10 by 20 cm. The spring line of the vault in Room 6 is 2.95 m. above the floor.

Throughout the building the masonry is of uniform blocks laid in more or less regular courses with much chinking. The stones of the doorjambs are somewhat larger and, like those of the walls, show care in working (pl. 23b). The vault stones are only roughly blocked out with the exposed surface crudely chipped and curved; many spalls were used.

At either end and at a lower level than the main structure, are two transverse chambers, of which the walls and vaults are standing in part. The west wall of the first transverse room to the north is 1.06 m. thick and carries a section of exterior molding; its base is 80 cm. below the spring of the vault. The whole molding is composed of a 20-cm. apron, on which rests a 24-cm. vertical band set out 5 cm. from the line of the vertical wall below. The two transverse chambers at the south end of the building (fig. 74, nos. 9, 10) have approximately the same dimensions as those at the north end. A section of exterior wall on the north side of Room 9 projects into the platform supporting the main structure. Parallel to this wall and to the north are the walls (interior facing only) of a chamber, now partially razed and filled, projecting from the south side of the platform. Thus it would seem that three building periods are here represented.

STRUCTURE XI, a ball court, lies at the southwest corner of Structure X. The two parallel ranges, with their long axes north and south, are 32 m. long; between them is the playing area, 9.20 m. wide. The walls of the bench, rising vertically from the floor of the playing area to a height of 90 cm., are composed of six courses of narrow blocks with long tenons (pl. 23c). These stones average 42 cm. in length, 14 cm. in height, and 37 cm. in depth. At three of the corners, facing into the playing area, are large, carefully dressed blocks. The one at the northwest corner measures 70 cm. high, 55 cm. wide, and 22 cm. thick. The stone at the northwest corner rises 90 cm. above the floor (pl. 23c). The top of the bench is 5.85 m. wide and rises with a slope of 9° (95 cm.) from the edge of the bench to its junction with the inner wall of the court. This latter wall rose vertically, as is shown by the stones of the first course which were found *in situ*, to a height of at least 1.40 m., or 3.25 m. above the playing area. The east range abuts a high mound (the west side of the south court of

Structure X), which may in some way have served as a superstructure, a not uncommon plan (cf. Chichen Itza, Structures 2D1, 3D4, 3C10; Coba, Structure XVII). The west range did not support a superstructure nor was any trace of a stairway observed on its west slope. Excavations on the benches along the east-west axis did not disclose stone rings tenoned in the wall or lying in the debris, but this fact does not deny the supposition that rings of some sort were used (Blom, 1932, pp. 515-16). No stone disks or end-markers were found set in the playing area along its north-south axis.

Lying north of Structure X is a large, uneven plaza measuring 92 m. east and west by 70 m. north and south, and sloping 4 m. upward from the northeast to the southwest. Bounding the north side of this plaza is a single low mound, 116 m. long, with a pyramidal structure in line with its transverse axis.

STRUCTURE XII lies at the northwest exterior of the plaza. It is important only in the fact that two stelae, 1 and 2, were found at its south base. Neither was sculptured and only Stela 1 is standing.

WEST GROUP

West of the ball court is a large open space known as the West Plaza. Its north side is defined by a single long mound; the west is bounded by Structure XIII, a complex assemblage of courts, pyramids, and mounds. The low mound along the south side of the plaza is an eastward projection from the southeast corner of Structure XIII.

STRUCTURE XIII. This structure is in a poor state of preservation; only a few standing walls may be seen,

some of which carry portions of vaults, but most of the architectural details are concealed by the debris which has accumulated with the collapse of this extensive assemblage. The structure—more properly the group—has arbitrarily been divided into four units: the South Court, the Middle Court, the North Court, and the Great Pyramid.

The *South Court*, 14 m. (east to west) by 25 m., is defined on the south and east by low mounds which probably, from their width and height, were formed of two parallel ranges of chambers. To the west is a great pyramid, on which rested a building. Now only a few traces of walls are to be seen; no ground plan or architectural details could be made out. The *Middle Court* is bounded on the east by a terrace 3 m. high and 33 m. long. A stairway on the east side, now barely traceable, led to a parallel arrangement of rooms on top of the terrace. The *North Court* is surrounded by continuous low mounds with remains of parallel ranges of rooms on the west and south. Two rooms on the latter side are 13 m. and 14.70 m. long, 2 m. wide, and the wall dividing them is 90 cm. deep; a single doorway connecting them is 1.80 m. wide. The masonry of these rooms consists of large rectangular blocks which seem to have been worked with care, but are now much weathered. Rising from the long low mound on the north side of the court is the *Great Pyramid* which measures 35 by 27 m. at its base and 14 m. high. An accumulation of debris surmounting the pyramid indicates that it formerly carried a superstructure.

Southeast of Structure XIII are a number of small mounds which show no walls above the debris. As is seen in plate 68, this section of the city is very uneven, but the larger mounds follow the more regular contours.

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