

The finding of human bones and various objects in these subterranean chambers leads Mr. Thompson to believe that many of these singular structures were finally used as depositories for human remains, probably secondary burials in connection with some special rite, after which the opening to the Chultune was closed and cemented.

The use of these structures, so carefully made and so essential as reservoirs, as receptacles for human bones, and the fact that several have on the walls representations of birds, turtles, and other figures, indicate a singular and interesting feature in the customs of the unknown inhabitants of this ancient and ruined city. It is important to learn whether this custom prevailed in other prehistoric cities of Mexico and Central America.

The figures accompanying this report, showing the ground plans and vertical sections of a large number of these subterranean structures, together with the detailed accounts given on the following pages, represent the first systematic study of the Chultunes of Yucatan.

F. W. PUTNAM,
Curator of the Museum.

HARVARD UNIVERSITY, CAMBRIDGE,
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THE CHULTUNES OF LABNÁ.

THROUGHOUT many of the ruined groups of Yucatan there are subterranean structures of a peculiar class. These are generally single chambers of a vault-like appearance built from ten to fifteen feet beneath the surface and communicating with the outer world only by means of a narrow well-like opening placed near the apex of the vaulted roof.

These structures are sometimes well-built chambers, having their walls, roof, and floor of dressed stones, and finished with a coating of fine hard stucco. A typical example of this class is shown in Figs. 1 and 2, the original being the structure sunk into the second terrace of the "Palace," Ruined Group of Labná.

Others are of a much rougher class, and were formed in the cavities or pockets from which the white earth called by the natives "zahcáb" had been taken.* These cavities, when their size and position were suitable, had their entrances closed up until only the circular opening was left. The roofs, walls, and floors were coated with thick layers of cement like stucco, which after being allowed to harden for a while was burnished into an impermeable surface by means of smooth stone implements, and the resultant structures so economically formed were ready for use.

I have called them all subterranean reservoirs, but opinions differ as to the use of these singular structures. Some students believe them to have

* Zahcáb is very abundant throughout Yucatan. It is found in pockets of various sizes. It is a white earth of a peculiar character, and served the ancient builders, as it does those of the present day, as a building material to mix with lime in the place of silicious sand, which is practically unknown in Yucatan.

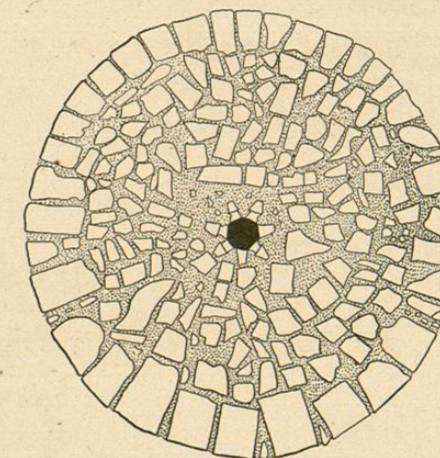


FIG. 1. — CIRCULAR PAVEMENT AROUND ENTRANCE TO CHULTUN, UPON SECOND TERRACE OF THE "PALACE," RUINED GROUP AT LABNÁ.

been storehouses for grain and other food. I believe them to have been, first and foremost, reservoirs to receive and hold rain water as it fell during the wet season, against the needs of the dry season. While some of them may well have served as depositories, this use was only incidental, and not the prime intention of their builders.

My reasons for this belief are as follows: The greater portion of the peninsula of Yucatan is one huge mass of limestone rock, — a recent formation, geologically speaking, — and save in some specially favored location this formation is near the surface, forming a level, monotonous region over which flow no rivers. No bubbling springs gush forth to create oases of refreshing coolness for the insect-bitten traveller; and to many natives of the region open water is an unknown vision.

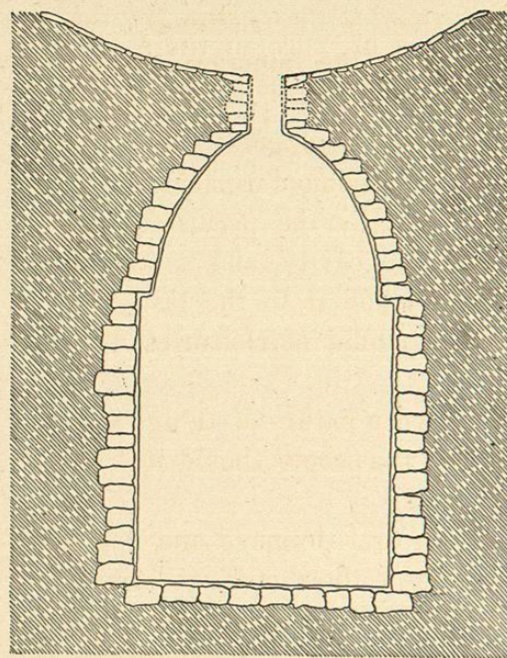


FIG. 2.— VERTICAL SECTION THROUGH CHULTUN, UPON SECOND TERRACE OF THE "PALACE," RUINED GROUP AT LABNÁ.

But two methods of water supply were available to the ancient builders. One was to seek for water in the depths of the earth, and the other to catch it as it fell from the clouds and store it for the time of need. To seek for water by perforating through fifty or a hundred feet of solid rock, often flintlike in density, was evidently not to be thought of by them. I have never found a well that I am certain was dug by the builders of these ruined groups. To a certain degree nature helped the people out of this dilemma, and made it possible for them to obtain water. As is often the case in calcareous formations, many natural cavities exist in the rocky bowels of the peninsula. Some of these are open to the light of day, and extend down and into the water level by means of huge chambers or labyrinthian passages, ending suddenly upon the edges of pools of water as cool and clear as crystal, seeming, in the darkness of the gloomy space around them, to be pools of blackest ink.

These water caverns, called by the natives "sonot," now wrongly called by the modern natives "cenotes," or water caves, furnished an inexhaustible supply of the precious fluid, and were ever sought for and utilized. Large populations grew up around some of them. Chichen Itza, one of the largest groups of ancient ruins in the Americas, was built up around several of these great caverns. The name itself, "Chichen Itza," signifies in Maya,

the mouth of the well of the Itzas: *chi*, mouth; *chen*, well; *Itza*, of the Itzas.

Steps cut into the solid rock, with-bound ladders, and inclined planes, to-day as formerly, furnish the means of access to the coveted water. In some places the modes of approach are so difficult and dangerous that the general custom of the country has to be reversed, and the men, instead of the women, have to bring the water to the surface.

The groups of structures built far from the cenotes were of course debarred from this source of supply, and the natives were compelled to adopt the second method, that of collection and storage. Nature relented a little in their behalf also, and furnished them with "haltunes," which, translated into our language, means potholes in the impervious rock, that during the wet season became filled with water.

These potholes were numerous, and some were of great size. I found one in the jungle near the ruined group of Chuntichmool capable of holding several thousand gallons. Steps had been cut by the prehistoric water-carriers down the solid rock side and into the cavity, and as the water gradually lowered, by these steps they could follow it to the last drop. I found it nearly filled with the accumulated mould of centuries, but the water was still clear and potable.

But these natural reservoirs were in the very nature of things exposed and precarious. What more natural than that the people should seek to eke out the supply by storage in artificial reservoirs?

They did this in places by improving natural drainage and enlarging natural basins. They also made basins, some of them of large size. The ruined groups of Uxmal and Xkichnook furnish notable examples of this. The "akalches" that make Uxmal to-day a hot-bed of deadly fevers, are the supply basins of the ancient times; their once clear bottoms are now buried deep in swamp ooze, and decaying vegetation masks their true outline. Wild ducks, serpents, and great frogs are now the only creatures that can live beneath the great white sheet of miasma that each night shrouds the deserted yet magnificent piles near by.

In other places the people seem to have depended upon a large number of smaller reservoirs, — the subterranean chambers here described. Each edifice, each terrace, even of the same structure, had one and often more of these subterranean chambers. No one of them could hold a great quantity of water. The largest one I ever encountered held less than ten thousand gallons. Yet when these are counted by the score, as is the case in many of these groups, the aggregate amount of water supply will be found to be amply sufficient for the needs of a large number of persons, especially if the fact be taken into consideration that these people seem to have had practically no domestic animals and were, if they in any way resemble their descendants of to-day, remarkably abstemious in the quantity of water they