

**ARCHÆOLOGICAL INVESTIGATIONS OF THE CARNEGIE INSTITUTION OF
WASHINGTON IN THE MAYA AREA OF MIDDLE AMERICA,
DURING THE PAST TWENTY-EIGHT YEARS**

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Twenty-eight years ago the Carnegie Institution of Washington undertook an intensive study of the Maya Civilization of southern Mexico and northern Central America.

This project had as its basis the desire to study an early civilization in as relatively a pure state as could be found, for the purpose of seeking light on the, today, vitally important question as to whether fundamental, underlying laws govern the growth of human society, or whether, like the familiar Topsy of American Literature, civilizations just "grow," following no predictable pattern, obeying no fixed laws in their development.

The Old World seemed to offer few, if any, examples of relatively high, pure cultures. Egypt had been repeatedly overrun from Asia Minor. The great nations of the Tigris and Euphrates Valleys had been as frequently conquered by Egypt. The Greeks and the Romans had built their own brilliant, distinctive civilizations on earlier cultures; while China has been a veritable melting pot of the Mongols, Tatars, Manchus, and latterly the Japanese, each of which has modified an earlier mixture, itself produced by still earlier blends. Old World civilizations everywhere were of composite rather than pure origin.

In order to find the simplest conditions possible for this complex study, the Carnegie Institution turned to one of the indigenous civilizations of the New World, namely that of the Maya, which developed, flourished, and fell in the Yucatan Peninsula, the latter, however, considered as a physiographic rather than a political unit. This peninsula, surrounded by water on three sides and separated from the adjacent continental land mass by high mountains, seemed to offer unusually favorable conditions for the study of civilization in a pure state, relatively free from adulteration by alien cultural elements. Here, if anywhere in the New World, because of an almost unique geographic and topographic isolation, a primitive culture might reasonably be expected to have run its course—

rise, florescence, and decay, developed and directed by the genius of the indigenous population, conditioned by the environmental forces, but largely free from complicating external influences—an ideal laboratory for the study of human history.

In the fall of 1912, the writer presented a plan for archæological research at the ruins of Chichen Itza, Yucatan, Mexico, to the Board of Trustees of the Carnegie Institution, and the following fall (1913) this plan, somewhat amplified and accompanied by two other reports on the present status of the science of anthropology,¹ was published by the Institution.

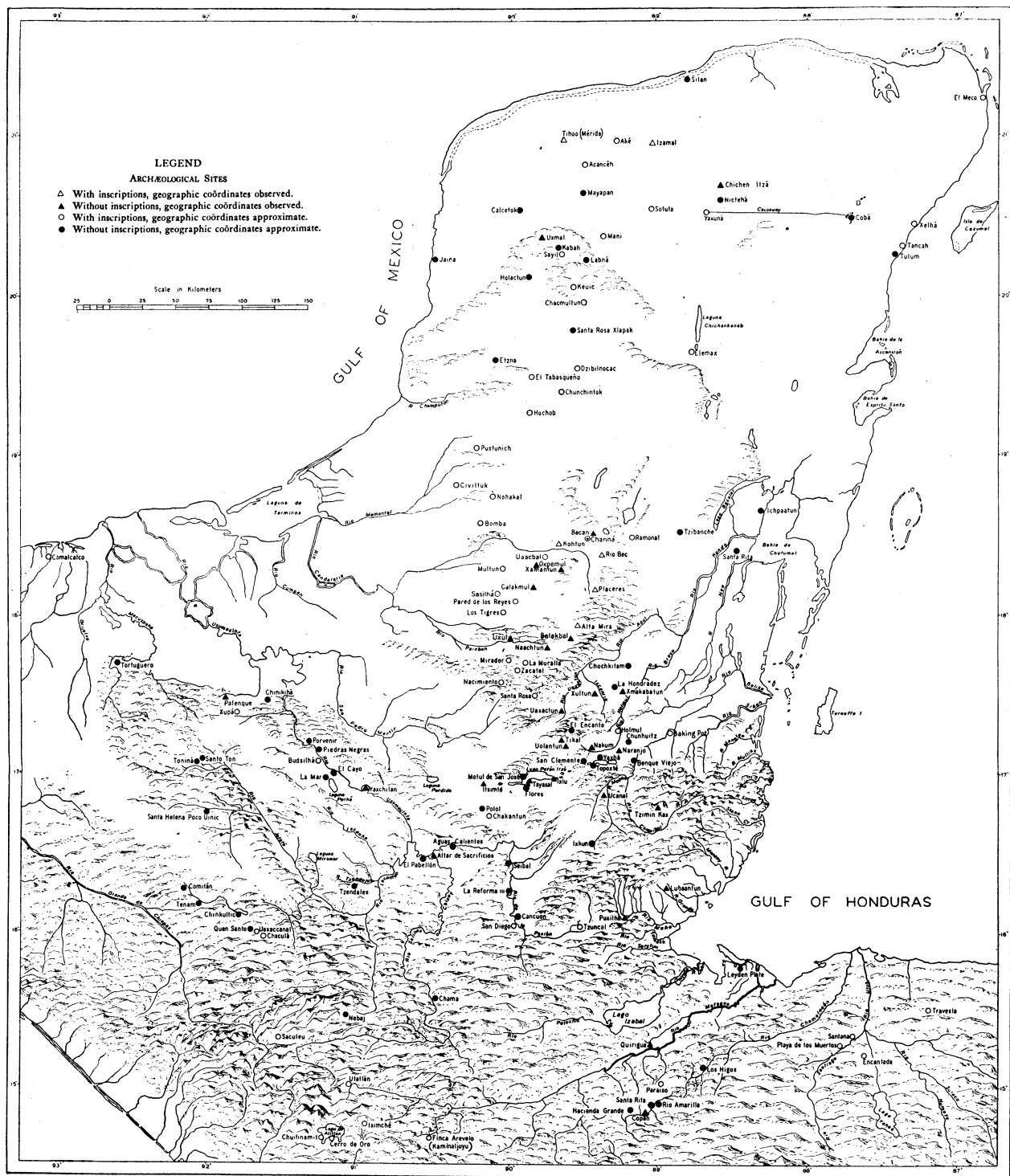
In December, 1913, the writer's project was approved by the Board of Trustees at its annual meeting, though owing to the unsettled state of Mexico at the time, inauguration of the research was postponed until a more favorable opportunity.

On June 1, 1914, the writer became permanently associated with the Carnegie Institution, but due to continuing unsettled conditions in Mexico, it was decided to undertake first, i.e., before the excavation of Chichen Itza, explorations in northern Guatemala (Department of Peten) and western Honduras (Department of Copan) in search of new epigraphic material, in which both regions, and especially the former, were known to abound.

From 1915 to 1937 inclusive, twenty archæological expeditions were sent by the Carnegie Institution to Peten and Copan which resulted in the discovery of a number of heretofore unknown archæological sites, and the recovery of a very considerable number of hitherto unknown hieroglyphic texts, which have been published by the writer in two large monographs.²

¹ *Reports upon the Present Condition and Future Needs of the Science of Anthropology*, by W. H. R. Rivers, A. E. Jenks, and S. G. Morley. Carnegie Institution of Washington, pub. no. 200; Washington, 1913.

² *The Inscriptions at Copan*. Carnegie Institution of Washington, pub. no. 219; Washington, 1920; and the *Inscriptions of Peten*, 5 vols. Carnegie Institution of Washington, pub. no. 437; Washington, 1937-1938.



MAP 1. Archaeological map of the Maya area.

The Second Central American Expedition, on May 5, 1916, discovered in northern central Peten a site which proved to have the earliest date in Maya chronology, and in addition, as many as ten different monuments, roughly dating from the last quarter of Baktun 8,³ A.D. 337 to 435,⁴ for which

³ The baktun was the highest time-period usually employed in recording Maya dates. It was 144,000 days, or about 394.26 years in length. The earliest contemporaneously dated monuments, as noted above, is just at the close of the third quarter of Baktun 8, in A.D. 328. Bak-

reason the name Uaxactun was given to this site, *uaxac* meaning 8 in Maya, and *tun*, stone, i.e.,

tun 9, which witnessed the rise, florescence, and decay of the Maya Old Empire, extended from A.D. 435 to 830.

⁴ The correlation of Christian and Maya chronologies now followed by most, though not all, students of Maya archæology, is that first proposed by J. T. Goodman ("Maya Dates," *American Anthropologist*, new series, vol. 7, no. 4, pp. 642-647. Lancaster, 1905), and later refined by Juan Martinez Hernandez (*Paralelismo entre los calendarios Maya y Azteca. Su correlacion con el calendario Juliano*, Merida, 1926), and J. E. S. Thompson

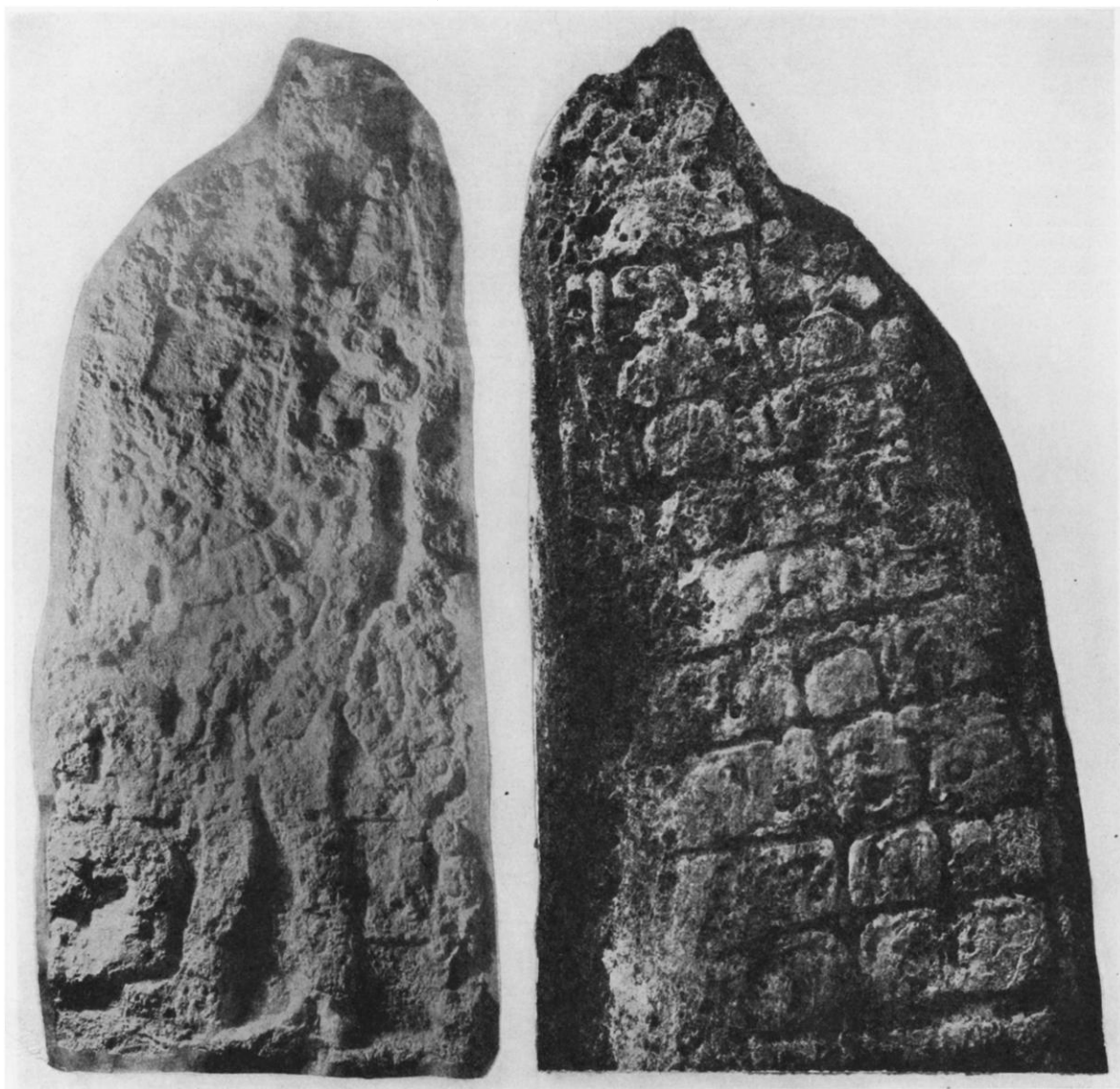


FIG. 1. Front and back of Stela 9 at Uaxactun, Department of Peten, Guatemala, discovered by the Second Central American Expedition of the Carnegie Institution of Washington on May 5, 1916. This monument is the oldest yet found in the Maya area and records the date 8.14.10.13.15 8 Men 8 Kayab of the Maya Era, or A.D. 328.

Stone 8, or a monument recording a date in Bak-tun 8.

The epigraphic evidence, indicating that on the basis of the dated remains Uaxactun is the oldest center of the Maya Civilization, prompted the Carnegie Institution to undertake an intensive study of that site, which covered a period of twelve years, 1926–1937; and no excavations in the Maya field have ever proved more fruitful. The art, architecture, and ceramics at Uaxactun were found to corroborate the epigraphic evidence, all pointing to the fact that this site is one of the oldest, if not indeed, the very oldest, center of the Maya Civilization.

The figures on the earliest monuments at Uaxactun are so crudely executed, their anatomical proportions so inaccurately represented, their postures so stiff, awkward and lifeless, that it is evident they represent the first attempts at stone

(A Correlation of Maya and European Calendars. Field Museum of Natural History, pub. no. 241, Anthropological Series, vol. 18, no. 1. Chicago, 1927).

carving among the ancient Maya. Prior to the first, sculptured, stone stelae, Maya monuments had probably been made of wood, and upon these latter, the beginnings of the Maya hieroglyphic writing had been carved. Unfortunately, none of these wooden stelæ has survived, so that all traces of the earlier stages of the hieroglyphic writing have disappeared.

In Pyramid E-VII-sub at Uaxactun we have the earliest example of Maya architecture extant. This stucco-covered pyramid was built at a very remote date in Maya history, perhaps as early as the beginning of the Christian Era, certainly well before the first stone monuments were sculptured. Somewhat later, it was completely covered with rough rubble and made into a much larger pyramid, E-VII. Pyramid E-VII was excavated in 1928 by the Eleventh Central American Expedition, and this work exposed the earlier stucco-covered E-VII-sub, which, owing to the fact that it had been completely buried, was practically in a perfect state of preservation. The style of the



FIG. 2. Pyramid E-VII-sub at Uaxactun, the oldest known example of architecture in the Maya area, uncovered by the Eleventh Central American Expedition in 1928. This very early stucco-covered pyramid may have been erected as early as the beginning of the Christian Era.

large stucco masks on this earlier pyramid is relatively so simple and undeveloped as to be almost pre-Maya, while the top of the pyramid shows that it had never supported a stone building, though there are indications that a pole and thatch construction had originally stood there. When E-VII-sub was built the Maya Civilization was still developing those cultural characteristics by which it was later to be recognized.

Finally, the earliest types of pottery in the Maya area are those found in the so-called "black dirt" deposits at Uaxactun, the earliest occupation level at this site, directly overlying the undisturbed soil. These earliest wares are red, black, or orange in color, and occur as jars, plates, and bowls; decoration is confined to incised or grooved lines. In addition, there are small modeled figurines in a red or buff ware. Both vessels and figurines are the earliest type of ceramic remains found anywhere in the Maya area. The first ceramic period at Uaxactun has been called Mamom; the next, Chicanel; the third, Tzakol; and the fourth and last, Tepeu. The first sculptured stone stelæ and the earliest use of corbeled stone roof-vaulting are supposed to have coincided with the beginning of the Tzakol ceramic period, and the Tepeu wares with the second period of corbeled roof-vaulting.

In short, the four principal lines of archaeological evidence now available in the Maya area—the epigraphy, art (principally as exemplified by sculpture), architecture, and ceramics, all indicate that Uaxactun is the oldest center of the Maya Civilization yet discovered.

The range of the dated monuments at Uaxactun, moreover, is the longest in the Maya area—562 years, i.e., from A.D. 328 to 889, inclusive, extending from 8.14.10.13.15 to 10.3.0.0.0 of the Maya Era, embracing the entire Old Empire period, which, in turn, witnessed the rise, first florescence and first decline of the Maya Civilization.

During the twelve field seasons at Uaxactun a number of buildings, both residential and religious—the so-called "palace" and temple types—were excavated; the foundations under the stelæ were all examined for ceremonial *caches*; a study of ancient house sites in the immediate vicinity of the ceremonial center was carried out; and a base map was made of the city.

The most important structures excavated were two temples—A-I and A-XVIII, and a "palace," A-V. The first yielded some of the most beautiful polychrome pottery ever found in the New World,

and the second, the largest piece of worked jade—an anthropomorphic figure, weighing 11½ pounds. The largest of the palace type structures, A-V, was also completely excavated; layer after layer of its complicated construction, revealing the many stages of growth through which it had passed, were removed, and the entire history of the building was traced. The discovery of three dated stelæ in the palace, two of them *in situ*, afforded valuable data as to the relative ages of different parts of this architectural complex; and the associated potsherds, which were numerous, have proved invaluable in establishing the ceramic sequence at Uaxactun. A small, relatively insignificant structure, B-XIII, was found to contain what is probably the oldest mural in the Maya area, a very fine wall painting, nearly ten feet long by four feet high, showing thirty-six human figures interspersed with hieroglyphs—the most complete wall painting ever found at an Old Empire site. Finally, the discovery of Pyramid E-VII-sub has already been described. This latter structure was part of an architectural assemblage which seems to have served as an astronomical observatory for determining the solstices and equinoxes—a great open-air observatory as it were.

One of the most important ceremonial centers of the ancient Maya world was Copan, in what is now the extreme western part of the Republic of Honduras, where nearly a third of all known hieroglyphic inscriptions are to be found. About fifty years ago, the Peabody Museum of American Archaeology and Ethnology of Harvard University carried on excavations at this site for four seasons—1892–1895. The finds were spectacular, including the discovery of the famous Hieroglyphic Stairway of Temple 26, but unfortunately internal troubles in Honduras terminated the project after such promising beginnings.

In the spring of 1934, largely through the interest of the Hon. Julius Lay, then United States Minister to Honduras, Dr. Jesus Rodriguez, the Minister of Public Education of Honduras, met the writer at Copan to discuss the possibility of again inaugurating archaeological work at this group of ruins. As a result of this meeting, the writer proposed a plan that was to be undertaken jointly by the Republic of Honduras and the Carnegie Institution, under which the former was to provide the day-labor needed in the excavations, repair work, etc., and transportation of supplies within the country, and the latter was to supply the technical staff, scientific equipment, etc. This

project, having been approved by both the parties concerned, was inaugurated in 1935 under the direction of the Institution's Division of Historical Research, and is now (1942) in its eighth year.

Perhaps the most important undertaking of the

Carnegie Institution at Copan has been changing the course of the Copan River, which was gradually eating its way into the Acropolis. Sometime after the abandonment of the city (probably during the early Ninth Century) the Copan River,



FIG. 3. Stela 4 at Copan, the latest monument erected at this site. It dates from 9.17.12.13.0 4 Ahau 13 Yax of the Maya Era (A.D. 783). When found, it had fallen and was broken into many pieces.

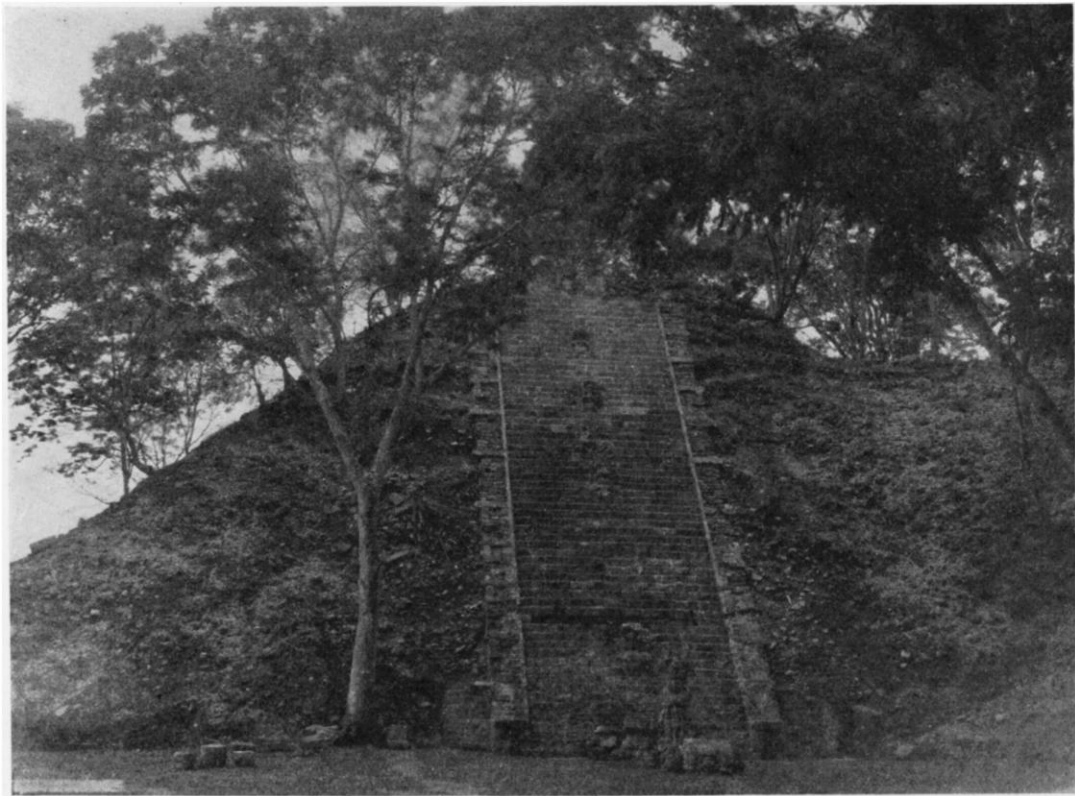


FIG. 4. The Hieroglyphic Stairway of Temple 26 at Copan, Department of Copan, Honduras, restored by the Third to Sixth Copan Expeditions in 1937-1940. The hieroglyphic inscription carved on the risers of the sixty-one steps in this stairway makes it the longest text in the *Corpus Inscriptionum Mayarum*. This stairway was dedicated in 9.16.5.0.0 8 Ahau 8 Zotz of the Maya Era, or A.D. 756.

which originally had flowed nearer the southern side of the valley, changed its course—the region is one of frequent, and occasionally intense seismological activity—and, swinging northward nearer the middle of the valley, began cutting away the northeastern corner of the Acropolis until it has exposed a section of this great artificial construction, more than 700 feet long and 118 feet high at the highest point, probably the largest archaeological cross-section in the world. In order to prevent the entire destruction of the Acropolis, the old river channel was cleared out, the river dammed just below the upper opening of the old channel, and its waters diverted from the new (post-Ninth Century) channel into the old stream bed, so that the Acropolis is no longer subjected to the destructive action of the river.

Another important activity of the Copan Project has been the re-erection of the fallen monuments. Twelve of the fallen stelæ, some of them badly broken, have been set up again in firm con-

crete bases, the fragments being cemented back into place. During the course of this work, which has enormously enhanced the appearance of the site, all stelæ-foundations were examined for foundation *caches*; pieces of pottery, jade pendants, earrings, beads were found, and a small object of gold—the only piece of metal ever recovered under archaeological conditions in an Old Empire site.

The most important architectural units which have been excavated and repaired at this site are: the Hieroglyphic Stairway of Temple 26, presenting the largest text in the *Corpus Inscriptionum Mayarum*; Temple 22, apparently dedicated to the planet Venus; the Ball Court (Structures 9 and 10); Temple 11, perhaps the most important sanctuary in the city; the Jaguar Stairway in the Eastern Court and the Reviewing Stand in the Western Court.

Occasion has been taken to examine, not only the Acropolis, but also many outlying smaller



FIG. 5. The Ball Court at Copan, flanked by Structures 9 and 10, with Stela 2 in the distance. This court, where a game not unlike basket-ball was played, was excavated and repaired by the Third to Seventh Copan Expeditions in 1937-1941. It was dedicated in 9.17.4.0.0 10 Ahau 18 Kayab of the Maya Era, or A.D. 775. The principal decorative motive is the parrot head, which is also the hieroglyph for the month Kayab when the court was dedicated.

groups of mounds for stratified deposits of pottery fragments, in the effort to establish the ceramic sequence of this site. Finally, in the modern village of Copan, a mile west of the main group of ruins, there has been built a regional museum, where the finest of the loose sculptures, of which there are many, and some of superlative esthetic merit, have been brought together, while Institution engineers have aided materially in building a water-system for the village.

Other Old Empire sites at which the Carnegie Institution has carried on archæological investigations are the following. Institution expeditions in 1921, 1929, and 1931 studied the epigraphy, sculpture, and architecture at Piedras Negras, on the Usumacinta River in northwestern Guatemala. Also in 1931, another Institution expedition spent a month at Yaxchilan in eastern Chiapas, Mexico, also on the Usumacinta River, examining the epigraphy, sculpture, and architecture, and mak-

ing a surveyed map of that site. In 1932 another Institution expedition spent a month at the ruins of Calakmul in southern Campeche. Previously sixty-two stelæ had been discovered at this very large site, but besides the usual study of the epigraphy, sculpture, and architecture, and the making of a surveyed map, the Institution's expedition found forty-one additional monuments, bringing the total up to one hundred and three, by far the largest number of stelæ at one site anywhere in the Maya area. In 1933 and 1934 expeditions were sent to the then almost entirely unexplored southern section of Campeche, a no man's land lying between the Old and the New Empire regions. Several new sites—Oxpemul, Xamantun, Uxul, and Balakbal—presenting important new hieroglyphic inscriptions and architectural features were discovered. Also in 1934 an Institution expedition spent several months at Quirigua, Guatemala; four fallen monuments, in-

cluding Stela E, a great shaft of sandstone thirty-four feet eight inches high, weighing sixty-five tons, the largest piece of stone ever quarried by the ancient Maya, were again set up. During the course of these operations, all the monuments

were examined for foundation *caches*, and some interesting material—finely chipped flint blades, a number of pieces of unworked jade, and a beautifully carved jade pendant—were recovered. In addition, two magnificent altars associated with



FIG. 6. Stela 1 at Quirigua, Department of Izabal, Guatemala. This monument was dedicated in 9.18.10.0.0 10 Ahau 8 Zac of the Maya Era (A.D. 800). When found, it had fallen and was lying on its back (the face shown here). It was re-erected by the Seventeenth Central American Expedition in 1934.

Zoömorphs O and P, respectively, were found; each presented a superb, dancing human figure of heroic size.

In 1923 another, exceedingly important activity was inaugurated, namely the determination of the geographic coördinates of the principal cities of the Maya Civilization. The only business bringing man into the vast, trackless forests of northern Peten is the search for *chicle*, the latex of the *Achras zapota* L.—the ingredient which makes chewing-gum chewable. The meandering trails through the forest, used by the *chicleros*, or *chicle* bleeders, are kept open only by constant travel. A trail that has not been used for two years is all but impassable, and one that has not been travelled for five years, completely disappears, engulfed by the overwhelming vegetation. If some satisfactory substitute for *chicle* in chewing-gum should be discovered, it would put an immediate end to the *chicle* business (for *chicle* has no other commercial use than in chewing-gum), which, in turn, would be followed by the total disappearance of all *chicle* trails and the consequent loss to knowledge of many important Maya sites. Fearing just such an archæological catastrophe, the writer began equipping the Institution's expeditions to the Yucatan Peninsula with the instruments necessary for determining latitude and longitude, and between 1923 and 1936 the geographic coördinates of no less than forty-three archæological sites were secured. An unexpected by-product of this activity, was that, because of these data, it became possible for the first time to make an accurate map of the northern half of Peten, Guatemala, and southern Campeche and Quintana Roo, Mexico.

Not to neglect the humbler side of ancient Maya life in all these investigations of its higher cultural manifestations, a complete comparative study of Maya house-types (the simple domestic architecture) was carried out from one end of the Maya area to the other—in the highlands of Guatemala, the lowlands of Peten, and in the northern half of the Yucatan Peninsula. It was found that the Maya of today, especially in northern Yucatan, live in exactly the same type of house made of poles and thatch, rectangular in plan with rounded ends, as did their ancestors, five to fifteen hundred years ago.

In the foregoing investigations, the Carnegie Institution has fairly well covered the period of the Maya Old Empire. Indeed Uaxactun alone has the longest range of dated monuments found

anywhere in the Old Empire, from A.D. 328 to 889; there remains, however, to describe the Institution's intensive as well as extensive operations in the New Empire region of northern Yucatan.

The Chichen Itza Project, mentioned at the beginning of this article, was not inaugurated until January 1, 1924, through a contract between the Ministry of Agriculture and Interior of the Mexican Government and the Carnegie Institution of Washington.

Chichen Itza was chosen as a New Empire center of intensive study by the Institution because of a number of outstanding characteristics: first, it was the largest city of the New Empire; second, it was the most sacred city of the New Empire, the Mecca of the Maya World in the Thirteenth and Fourteenth Centuries, pilgrimages having been made thereto from all parts of the northern Yucatan Peninsula and even from points more distant;⁵ third, its architecture has closer affinities with that of archæological sites in the highlands of Mexico, than the architecture of any other center in the Maya area; and fourth, it is one of the very few sites in northern Yucatan having a direct chronological and documentary connection with the Old Empire.

The Chichen Itza Project was continued for seventeen years, 1924–1940, and had a two-fold objective: (1) to understand and interpret Maya culture, its motivating forces, its development and decay in so far as these social evolutionary processes could be studied at Chichen Itza; and of equal importance (2) to repair and, in a few cases, to restore the different buildings excavated so that they should serve as educational exhibits for posterity.

During the seventeen years the Institution worked at Chichen Itza, a number of important constructions dating from all periods of the city's history, A.D. 879 to 1441, were excavated and repaired so that, with reasonable care, further deterioration will be permanently arrested. The most important of these buildings are: (1) the Temple of the Warriors and associated colonnades at the Group of the Thousand Columns; (2) the Monjas and its annexes; (3) the Caracol or Astronomical Observatory; and (4) the Marketplace, also at the Group of the Thousand Columns.

The Temple of the Warriors was so named be-

⁵ Objects have been found in the Well of Sacrifice at Chichen Itza, which came from as far north as the State of Jalisco, Mexico, and from as far south as the Republic of Costa Rica.

cause of the figures of warriors sculptured on the four sides of the twenty stone columns or piers which supported the corbeled roof-vaulting of this building. A remarkably fine altar was found against the back wall of the sanctuary of this temple which was supported by Atlantean figures, breast high. The walls originally had been painted with striking murals, of which it was possible to salvage parts of two only: (1) a scene of human sacrifice to Kukulcan, the Feathered Serpent, patron-deity of Chichen Itza; and (2) a fishing village on the north or east coasts of Yucatan, as it appeared about six or seven hundred years ago. By far the most important discovery in this construction, however, was made inside the pyramid, where an earlier buried temple was encountered. In a covered limestone urn, buried under the floor of the sanctuary of the earlier temple, where the corresponding altar had formerly stood, a turquoise mosaic plaque was found, eight and one half inches in diameter, its principal design con-

sisting of two pairs of facing serpent heads, evenly spaced. Beyond any question this plaque is one of the finest examples of ancient American art and handcraft ever brought to light.

The Monjas, or so-called Nunnery, though its former function could hardly have been such, is a great architectural complex, which grew by accretion, probably over several centuries, and which shows at least four major periods of construction, characterized by corresponding changes in the masonry. Considerable quantities of ceramic fragments were recovered during the excavation and repair of this building which, together with the associated types of masonry, permit significant conclusions to be drawn as to the correlation of architectural and ceramic periods at Chichen Itza.

One of the most important buildings in the Maya area is the Caracol, or Astronomical Observatory at Chichen Itza. This is a round tower surmounting two rectangular platforms, the lower one of considerable size. The tower itself is built

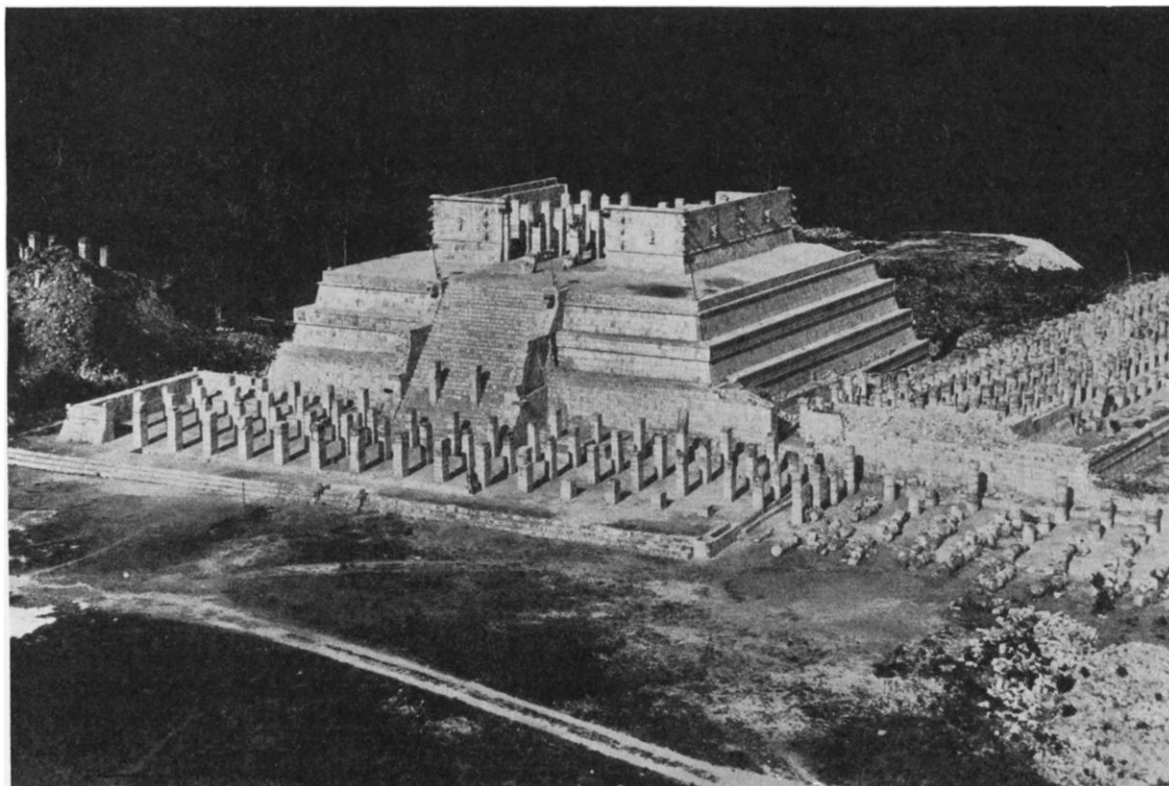


FIG. 7. Temple of the Warriors at Chichen Itza, Yucatan, Mexico. This temple was excavated and repaired by the Second to Fifth Chichen Itza Expeditions in 1925-1928. In front of it is the Northwest Colonnade and to its right, the North Colonnade. The upper halves of all three buildings, *i.e.*, above the level of the tops of the columns, have not been restored. This was the second most important temple at Chichen Itza, being dedicated to Kukulcan, the Feathered Serpent, patron deity of the city, probably in the Twelfth or Thirteenth Centuries.

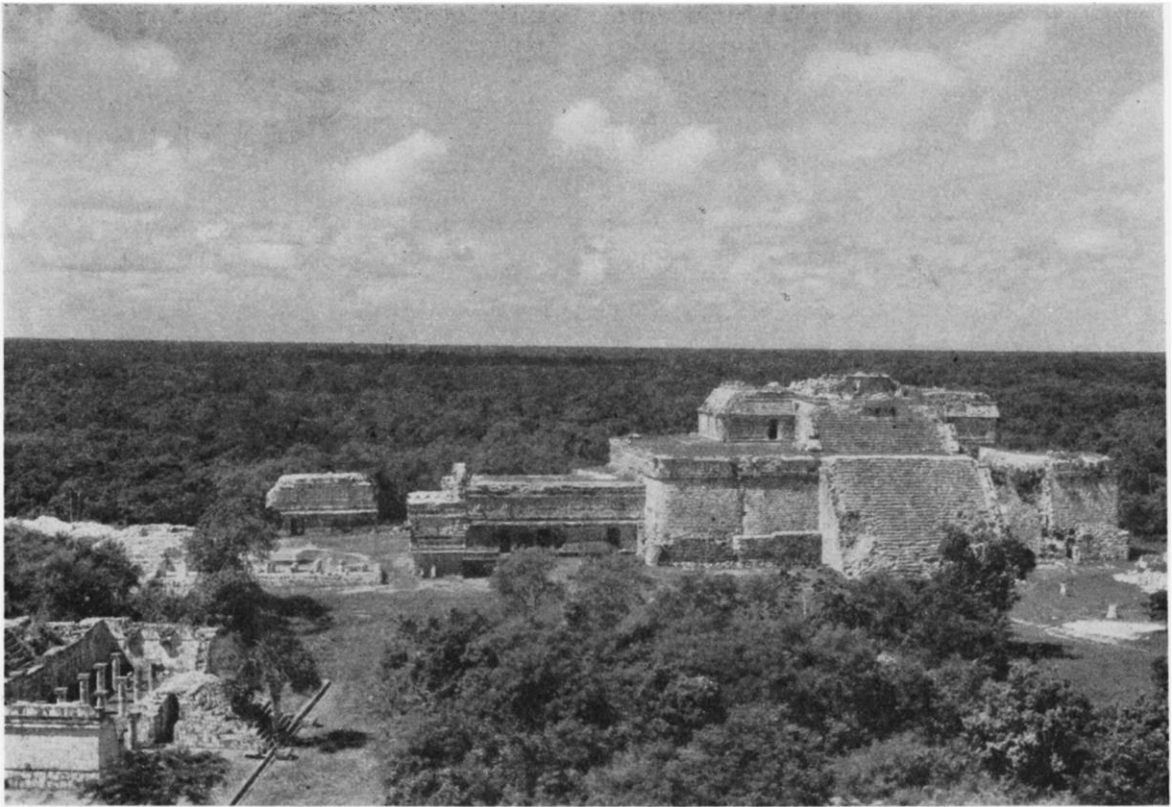


FIG. 8. The Monjas at Chichen Itza, excavated and repaired by the Ninth to Eleventh Chichen Itza Expedition in 1932-1934. This building, the largest of the "palace" type at this site, may possibly have served as the residence of the Itza rulers. It was probably erected in the Tenth Century.

in two stories, both round, the upper story being somewhat less in diameter than the lower story. A spiral stairway ascends from the ground floor of the latter to a small chamber in the second story, from which various lines of sight (small tunnel-like openings running through the thick masonry from inside to out) coincide with astronomically significant bearings. For example, a line of sight along one of the axes of the small western tunnel cuts the sun in half at the moment of sunset on March 21, the vernal equinox.

The Market Place on the south side of the Court of the Thousand Columns is a strikingly beautiful colonnade, 240 feet long and 15 feet wide, of alternating round and square columns. A wide entrance at the back gives access to a sunken court, surrounded by a peristyle. Although the name Market Place has been given to this construction, it is more likely to have been a council chamber.

In addition to the foregoing major architectural units, some twenty smaller buildings of varying

types and sizes have been excavated and repaired at Chichen Itza—temples, colonnades, ball courts, vapor-bath houses, and dance platforms, so that a considerable part of this ancient city has been exhaustively studied.

It has been stated that the range of dates at Uaxactun extends from A.D. 328 to 889, and at Chichen Itza from A.D. 879 to 1441, i.e., an overlap of ten years. In 1441 Chichen Itza was finally abandoned, the last of the Itza leaving Chichen Itza and migrating southward where they re-established their new capital, called Ta Itza, or, as it is more generally known by its Hispanicized form, Tayasal, on a high peninsula at the western end of Lake Peten Itza in central Peten, Guatemala. Here they maintained their political independence for another two hundred and fifty years, until they were finally conquered by the Spanish under Martin de Ursua in 1697.

In 1921 and 1922 the Carnegie Institution carried on excavations at Tayasal and established two definite periods of occupancy at this site, separated

by a long interregnum, probably of some seven centuries, indicated by an archæologically sterile stratum, several feet in depth. The earlier of these occupation levels, because of the association of dated stelæ, was clearly referable to the Old Empire, while the later, because of the associated ceramic remains, was as clearly, very late, i.e., referable to the late New Empire.

With these three sites—Uaxactun, Chichen Itza, and Tayasal—covered by intensive study, the Carnegie Institution has under its purview the entire range of Maya history—a minimum of fifteen hundred years.

As in the case of the Old Empire region, the Carnegie Institution has sent a number of archæological expeditions to various parts of the New Empire region. The several Institution expeditions to southern Campeche have already been described; in addition, two expeditions—in 1916 and 1918—have been sent to the east coast of Yucatan which resulted in the discovery of a

number of new sites and the identification of a definite archæological sub-province along the east coast of the Peninsula.

A joint Architectural and Ceramic Survey of Yucatan has been undertaken, seven expeditions having been sent to various parts of Yucatan and Campeche in 1929–1933, 1935, and 1936. As a result of this survey, architectural and ceramic sub-provinces have been delimited, and the groundwork laid for basic conclusions as to the origin, development, and distribution of New Empire architectural and ceramic types.

In order to ascertain the historic background of the Maya at the time of the Spanish Conquest, a study of the archives in Spain, Mexico, Guatemala, and Honduras has been made. A group of investigators, working in the archives of these countries, has already brought to light important and heretofore unknown manuscript material bearing on this subject.

During the past decade the Institution has

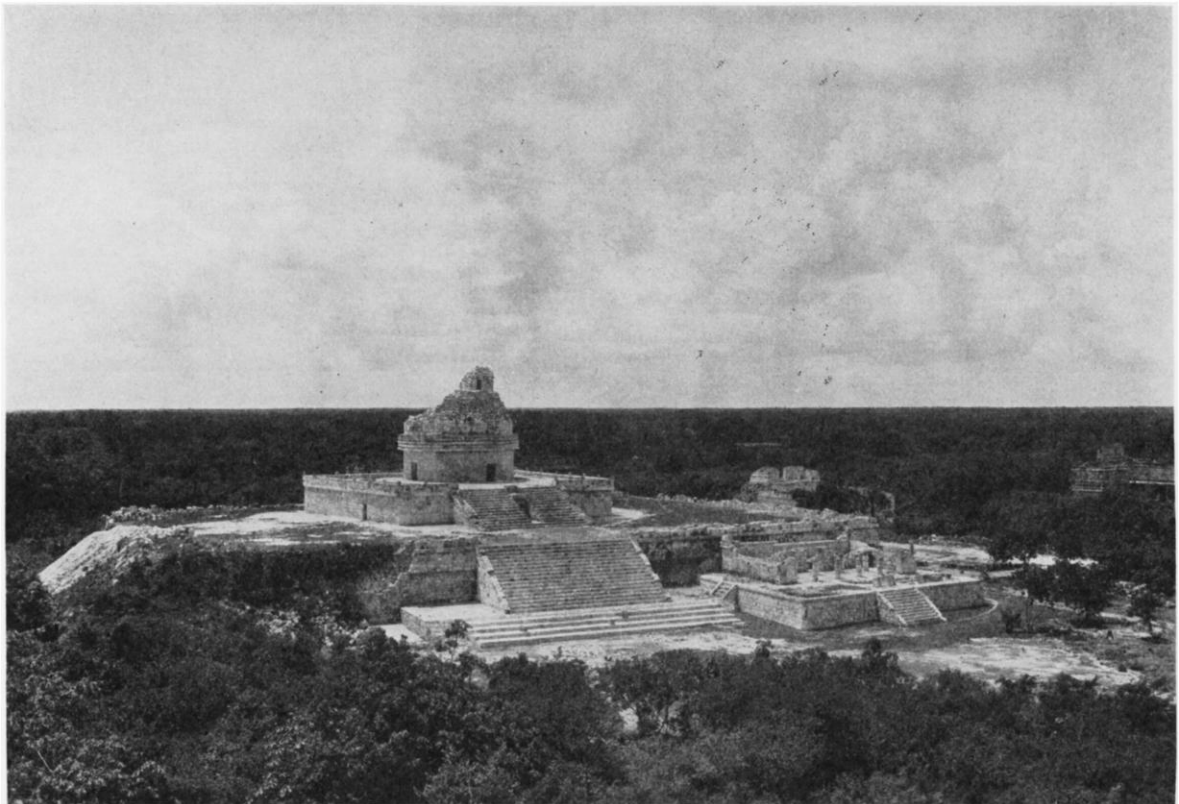


FIG. 9. The Caracol, or Astronomical Observatory at Chichen Itza, excavated and repaired by the Second to Fourth and the Sixth to Eighth Chichen Itza Expeditions in 1925–1927 and 1929–1931. This important building was the center of the scientific life of the ancient city. Here astronomical observations were made, and here the positions of the four principal stations of the year—the equinoxes and solstices—were determined. The Caracol may have been erected in the Tenth Century.



FIG. 10. The so-called Market Place at Chichen Itza. This building, composed of a very long colonnade with a sunken court behind it, the latter surrounded by a peristyle, is, in all probability, not a market-place at all, but more probably was a council chamber, since a decorated dais, or throne, was found against the back wall. It was excavated and repaired by the Eighth Chichen Itza Expedition in 1932, and was probably built in the Twelfth to Thirteenth Centuries.

carried on excavations at a number of sites in the highlands of Guatemala, lying just south, and beyond the southern periphery, of the Old Empire.

The most important of these is Kaminaljuyu, in the southern outskirts of Guatemala City, a very large ceremonial center, non-Maya in character, as defined here, but having had close trade relations with Old Empire centers, and even with points as far distant as San Juan Teotihuacan in central Mexico, as established by the ceramic wares found at this great highlands center. The biggest piece of jade ever found in the Western Hemisphere, a large, unworked, water-worn boulder, weighing just over two hundred pounds, was discovered here in 1937. In the highlands, the Institution has also excavated at Zacualpa and at several ruins on Lake Atitlan; work has been done at San Agustin Acasaguastlan in the Motagua Valley and at Campana San Andres in western Salvador.

All the foregoing activities are primarily archaeological in nature, but, in order to present a more

complete picture of the Maya Civilization, six other projects, involving the coöperation of non-archæological disciplines, were inaugurated to cover the whole Maya area: (1) an ethnological survey; (2) a linguistic survey; (3) a medical survey; (4) an anthropometric survey; (5) a survey of the flora and fauna; and (6) a geographical survey. Scientific agencies, other than the Carnegie Institution of Washington, were invited to participate in these collateral studies.

Through a coöperative arrangement with the Department of Anthropology of the Division of the Social Sciences of the University of Chicago, the ethnologic problem has been attacked simultaneously in northern Yucatan and in the highlands of Guatemala and Chiapas, Mexico, by a group of investigators who are still (at the present writing) engaged upon these studies. Regional differences naturally have been found, but certain fundamental traits, which perhaps may be described as definitely Maya, are beginning to be identified.

Also in collaboration with the same department of the University of Chicago, there has been undertaken a comparative philological study of the different branches of the Maya linguistic stock from the Huasteca of northern Veracruz and adjacent parts of San Luis Potosi, and Tamaulipas, Mexico, in the extreme northwest, to the Chorti of eastern Guatemala and western Honduras. New techniques in sound recording have been developed and it is hoped closer analyses of the phonetics of the several branches of the stock will be possible.

In collaboration with the School of Public Health of the Medical School of Harvard University, medical surveys of northern Yucatan and the highlands of Guatemala have been completed. The general results of the medical surveys indicate that the Maya area is one of the healthiest regions in the world.

In a joint project with the Department of Anthropology of Harvard University and the Institution's Department of Genetics, an extended series of anthropometric measurements, basal metabolism tests, nutritional studies, etc. have been made on the Maya of northern Yucatan. The anthropometric survey, however, has not as yet been extended to the highlands of Guatemala.

In connection with the University Museums of the University of Michigan, a study of both the flora and the fauna of the Yucatan Peninsula has been undertaken; and in collaboration with the Bureau of Plant Industry of the United States Department of Agriculture, Cornell University, and the United Fruit Company, a study of the agricultural system of the modern Maya, especially as applied to the cultivation of maize, upon which

the whole Maya Civilization was based, has been carried out. Geographically the region is highly isolated and the flora and fauna show corresponding ecological differentiation.

In connection with Clark University and the University of Florida, geographic studies were undertaken in the highlands of Guatemala while the Institution's own Geophysical Laboratory has been studying seismologic and volcanic phenomena in the same region. A study of the *cenotes* of Yucatan—the principal source of water in the northern part of the peninsula—has been made in collaboration with Duke University.

These collateral investigations in ethnology, linguistics, archives, epidemiology, anthropometry, flora, fauna, geology, and geography, together with the various archæological projects herein outlined, have made possible the reconstruction of a fairly complete picture of the Maya Civilization and of the environment which produced it.

In closing, one further phase of the investigations of the Carnegie Institution of Washington in the Middle American field during the past twenty-eight years may, perhaps, be emphasized, namely, a practical demonstration on the part of an American research institution of the Good Neighbor Policy.

In the three Latin American Republics next adjoining us to the south—Mexico, Guatemala, and Honduras—the Carnegie Institution of Washington has left magnificent memorials of international good will and friendship in the ancient Maya cities which it has excavated and repaired; Chichen Itza in Mexico, Quirigua in Guatemala, and Copan in Honduras.