

centimeters in diameter. It was placed in a corner on the courtyard floor and it rose to a height of fifty to seventy-five centimeters. ^{the thickening} Mud brick walls were built to enclose it within its corner. ✓ The spaces between the ~~the~~ oven ring and its enclosing walls were filled with broken bits of adobe bricks and mud plaster, which served both as protection and as insulation.

Each oven had a small draft hole at its base, as those in Houses 3-5 and C119, Plates III-V. In use, a fire would be laid in the oven to make a bed of coals on which to place the round, flat loaves of unleavened dough to be baked into bread. It was very evident that ovens were seldom entirely cleared of ashes. When they became so choked with debris that the draft holes could no longer function, new ovens were often built on top of the old, with new draft holes at higher levels. Ovens showing long continued use at rising levels of occupation were common at Karanis, Plate VI, House 163.

Near the oven was usually a fireplace that ^{consisted} ~~consisted~~ simply of two adobe bricks, laid ^{flat} ~~flat~~ on the floor, spaced about fifteen to twenty centimeters apart, ^{and} ~~with inner ends up against the courtyard wall, Plate VII.~~ A small fire ^{was} ~~was~~ laid between the bricks, and on top of ~~it~~ ^{they} were placed the round-bottomed cooking jars.

All the preparation of the food for the household was carried on in the courtyard, near the oven and the fireplace, with the refuse being thrown on the floor. All kinds of ^{objects} ~~things~~ connected with cooking and baking were found strewn about in the filling of the courtyards of houses at Karanis. Animal bones, vegetable parings and stalks, fruit pits, husks and chaff from the sifting of grain, heaps of parched wheat and barley, seeds of plants and weeds, broken bits of household utensils of earthenware, wood and glass, parts of harness and rope, and basketry, ^{these} ~~these~~ were some of the

~~these are OK~~

things commonly found in courtyards.

Then, too, along the walls of many courtyards evidences were found of low, mud-brick mangers for the animals, as in House B168, Plate ~~VIII~~⁸. Here the cows, the donkeys, the sheep, and the goats could munch their fodder of green forage, brought in fresh each evening from the fields, or the finely cut straw that was left over from the threshing. ^{Some} ~~Some~~ ^{obviously for the young sheep and goats. These pens} courtyards had small animal pens, covered with thin roofs of reeds and mud plaster, ~~for the young sheep and goats,~~ as in House B5, Plate ~~IX~~⁹.

Courtyards usually ~~had~~ ^{were equipped with} storage bins ~~that were~~ made of mud-brick, such as those in House B108, Plate ~~X~~¹⁰. They varied in size and shape and were often partially sunk beneath floor levels.

Added to all ~~this~~ refuse from the preparation of the daily food and from the keeping and care of the domestic animals in the courtyards, everything left to ^{lie} ~~be~~ where it fell or was thrown, came the sand, blown in over the roofless walls by desert storms. It is really not surprising that there were marked changes in occupation levels at Karanis. They will be noted in detail in the descriptions ^{following} ~~of the~~ of the ground floor plans, the sectional maps, and the special house plans.

The levels also of streets and passageways rose from natural causes. Even more than courtyards they were exposed to sand storms.¹ Entrances to many houses at Karanis were protected by windbreaks, low walls jutting out into the streets. The entrance to House C68, ^{for example,} was protected in this way, Plate ~~XI~~¹¹, and also that of House C56, along Street C552, Plate ~~XII~~¹².

Streets were often used for ~~many~~ ^{other} purposes that that of communication. Apparently, if the courtyard space within a house were inadequate,[?]

storage bins and mangera might be built in the street or passageway beside the house. Even bake ovens were found in streets, especially in narrow passageways between ^{two} houses. Such narrow lanes were often blocked off and converted into small courtyards. This was particularly evident in the late occupation, as in the B level of Street CS58, where an oven had been built across the narrow entrance way into CS58 from street CS52, Plate ~~XIII~~¹³.

Another common obstruction in a street was the mastaba, a low bench built along the wall beside the entrance to a house. Here people could sit ^{and rest or put down} ~~XXXXXXXXXXXX~~ their heavy loads of fodder and grain, brought in from the fields or from the threshing floors.

Streets and other open areas were convenient places for the making of adobe bricks. Here and there in streets throughout the town of Karanis were found low ridges of hard, sun-baked clay, obviously residue from the mixing of mortar and the shaping of adobe bricks.

At the same time, structural changes were made in the houses themselves, especially during a long, continued period of occupation. Because of a ^{natural} rise in street levels above the thresholds of entrances to certain houses, it became necessary to build new doorways. Two methods of reconstruction seem to have been used by the people of Karanis under such circumstances. In some houses old doorways were completely blocked, from thresholds to lintels. Then new doorways were cut, usually in the same walls, at higher levels. In other instances, where apparently the street levels had not risen more than fifty or sixty centimeters above the original street passages, only the lower parts of the outside doorways would be blocked and new ~~XXXX~~ thresholds made above the blocking. In such cases, of course, the old lintels were removed and the walls above them cut to make doorways of the proper height.

significant details of changes in occupation levels will be described in the presentation that follows of the data recorded on the various maps and plans. References will be made to these maps and plans by numbers and at times by triangulation squares.

The definitive maps and plans of Karanis are divided into six groups. The first group consists of the Triangulation Chart, Map 1, the Topographical Map, Map 2, and the Air Map, Map 3. The remaining groups are: Key Plans, Maps 4-14; Ground Floor Plans by Triangulation Squares, Maps 15-66; Sectional Maps, Maps 67-94; Special House Plans, Maps 95-112; and Constructional Details, Maps 113-119.

On Maps 4-119 houses and streets are marked by numbers with letters usually preceding them. These letters designate levels of occupation. A marks the top layer, B the second ^{level,} ~~layer~~ and so on with succeeding letters down to desert bedrock level. It will be noted, however, that certain houses and streets are marked by numbers only, without preceding letters. These are in areas that were excavated before the triangulation chart was made. In ^{many} ~~many~~ instances new numbers, with letters preceding them, were assigned to these houses and streets. Old, original numbers, however, were retained in cases where confusion might arise in checking objects that had been marked ^{earlier} with the old house numbers, and they have been incorporate into their proper triangulation squares.

TRIANGULATION CHART, TOPOGRAPHICAL AND AIR MAPS

The basis for the entire survey of Karanis was the Triangulation Chart, Map 1. The Topographical Map, Map 2, shows the contours of the site, superimposed upon the triangulation squares. Both maps are drawn to the scale of 1 to 2000.

Letters A-P on the left of Maps 1 and 2 designate the relative positions of the triangulation squares from north to south. Square A is immediately outside the northern limits of the ancient town and P is just beyond its southern boundaries. In order to avoid confusion, letters I and J have been omitted. Numbers 0-15, that run across the tops of these maps, designate the relative positions of the squares, west to east. Square 0 is beyond the western limits of Karanis and 15 just across the eastern boundaries. Each side of a square represents a distance of seventy meters, an arbitrary size that was chosen merely for the sake of convenience at this site.

At its greatest extent Karanis covered an area, oblong in shape, whose maximum dimensions were approximately seven hundred meters from south to north and one thousand and fifty meters from west to east. The base line, N to A, just outside the westernmost limits of the architectural ruins, was 593.070 meters in length. Including the Egyptian Geodetic Survey Bench Marks there were twenty-five principal stations in the triangulation. In order to facilitate the survey, it became necessary to establish ^{numerous} smaller triangulation points. These are not noted on the maps since they were naturally transferred to other positions as the excavations proceeded.

The Air Map of Karanis, No. 3, was made in the spring of 1934, by courtesy of the Egyptian Air Force. It shows the situation of the hill of Karanis in relation to the cultivated area on the south and the desert on the other ~~three sides~~ sides.

KEY PLANS

The Key Plans, Maps 4-14, drawn to a scale of 1 to 400, show in outline the plans of the architectural and topographical features

of the site, the private and public buildings, the streets and passageways, and the insulae or blocks over extensive areas, that include several triangulation squares. Since the purpose of the Key Plans is to furnish only a general outline of the topography and architecture in the areas excavated, only boundary walls of houses are shown. The detailed subdivisions of houses into rooms are recorded on the Ground Floor Plans and the Special House Plans. Likewise no differentiation by hatching has been made on the Key Plans for the various levels. That has been recorded on the Ground Floor Plans.

There are eleven Key Plans, as follows: No. 4, Fifth Layer, F-L, 8-12; No. 5, Fourth Layer, F-L, 9-12; No. 6, Fourth Layer, F-L, 7-8; No. 7, Third Layer, E-L, 9-12; No. 8, Third Layer, E-L, 7-8; No. 9, Late Third Layer, E-L, 9-12; No. 10, Late Third Layer, E-L, 7-8; No. 11, Second Layer, E-K, 9-12; No. 12, Second Layer, E-K, 7-8; No. 13, Top Layer, E-K, 9-12; and No. 14, Top Layer, E-K, 7-8.

The fourth and fifth layers, Maps 4-6, the ^{early} ~~earliest~~ occupation of the site, first and second centuries B.C., lay in the central and southern sections of the town. That area had been almost completely devastated to bed-rock level by the diggers ~~farther~~ for fertilizer, the sebbakheen. The portions of this early occupation, layers E and F, that lay within the Precinct of the Temple of Pnepheros and Petesuchos, have been described in Volume XXX of The University of Michigan Studies, Humanistic Series. They are recorded on Key Plans 4-6, squares K and L, 8-9.

A few house walls of the fifth layer have been recorded on Map 4, squares H10 and H11. Those of the fourth layer in this area are noted

on Map 5. Map 6 shows the scanty remains of walls of the fourth layer that lie northeast of the Temple Area in H7 and H8. In F9 and F10, Maps 4 and 5, two sections of a northern temenos wall are recorded. This was apparently the northern limit of the D and E levels of the town. No ruins of any construction belonging to the D and E levels were found north of this wall.

The length of the two sections of this northern temenos wall was approximately fifty-seven meters. The western limit of this enclosed area obviously lay under the part of the hill west of the Northern Temple, that was not excavated. A broken end of one section ✓ of this wall jutted out from the base of the escarpment left by the sebbakheen in this area. The eastern limit, however, was discovered, where the sebbakheen had left about seven meters of the eastern boundary wall, adjoining the north wall. Some distance to the south about twenty meters more of the eastern wall were excavated, joining on to ~~the~~ twelve meters of the original southern wall of the enclosure. The original eastern wall would then have been one hundred and fifty-five meters in length.

The maximum height of the temenos walls that were left standing was five meters. They were built on bed-rock and ^{were} close to a meter thick at their bases. They tapered to their tops.

The excavations revealed that there was a period of prosperity and expansion at Karanis that began about the middle of the first century A.D. and continued into the late second and early third centuries. It was a period of more or less continuous occupation in the south that expanded to the north, spreading out fanwise to the east and west. It is recorded on Key Plans, Maps 7-12, beginning with the third layer, running through the late third layer, and closing with the second layer. It was evident that

most of the houses of the late occupations of the site, fourth and fifth centuries, must have been on top of the central portion of the hill that had been completely destroyed by the sebbakheen. The low areas to the east and west of the main part of the hill, Air Map No. 3, show considerably later occupations of the site. These also had been plundered by the diggers for fertilizer. Only the eastern and western sides of the main hill of Karanis could be investigated, but from them it has been possible to gather definite data as to the topography and architecture of the town in succeeding levels of occupation.

One could see that some attention had been given to topographical planning in Karanis as the city grew and expanded, north, ^{east,} ~~and~~ and west. This was, however, rather a result of the mode of life and living of the times than of any carefully planned method of building.

Topographically Karanis consisted of a series of insulae or blocks along and between several, main, south-north thoroughfares. A wide street, CS210, ran from south to north on the eastern side of the hill, third and late third layers, Maps 7 and 8. It maintained a ^{width} uniform of slightly more than five meters from the southernmost point excavated in K12 to its original northern limit, marked by a gateway in G11, a distance of more than one hundred and fifty meters. Observations made south of the excavations in K12, in areas ruined by the sebbakheen, revealed that this street must have extended in the same general line to the southern limits of the town.

When the original doorway across CS210 in G11 was in use, the area north of it must have been more or less unoccupied. As the city expanded during the long, continued period of prosperity, ^{which} ~~that~~ ✓ began with the Augustan era, much of the area north of this gateway

was taken over by the military. The wall with its gateway was removed down to the new street level, slightly ^{above} ~~above~~ the original third layer occupation level. A large ^{building, perhaps serving as a} military barracks, C63, built diagonally across the line of CS210 in F and G11, ^{causing} ~~caused~~ the northern part of this street to shift to the west. A ^{state} ~~military~~ granary, C65, was built on the other side of this street, opposite the northern end of the barracks. It was the largest granary found at Karanis. An earlier granary, C123, was found along this same street, ~~but~~ farther to the south. Street CS210 must have been an important line of way for the transport of grain from the fields in the south to storage ~~in~~ granaries within the town, to await transshipment ^{by caravan route or canal} to the north.

This main thoroughfare underwent very few changes up to the time of the late third and early fourth centuries of occupation, the top layer. As time went on, other changes were made along the street in addition to the removal of the original gateway in G11. At one time a wall had been built, jutting out from House C119, and extending across the street line in F11. The purpose of the wall had been to mark off a space ~~to~~ to serve as courtyard or open area for private use by those who lived in Houses C119, C114, and C74. It was later removed down to the level of the late third layer of occupation. Traces were found of another small wall that ^{at one time} ~~also~~ extended out from the east wall of C119 to form a bin. The practice of building storage bins in streets and passageways was not at all uncommon at Karanis. Originally there had also been a wall extending across this street line from House C118, doubtless part of a courtyard construction. Both this and the windbreak wall for C71X were later removed down to their foundation courses.