
CHAPTER I.

THE PYRAMIDS OF ILLAHUN.

4. IN the first season at Illahun I had done some months of work toward finding the entrance to the pyramid, but without success. The external construction of the pyramid is peculiar, and unlike any other. It is partly composed of a natural rock, dressed into form up to a height of about 40 feet,—which is misattributed in Baedeker to the pyramid of Hawara. Upon this rock is the built portion of the pyramid core. And this is also unlike any other pyramid in being built with a framing of cross walls. These walls run right through the diagonals, up to the top of the building; and have offset walls at right angles to the sides. The walls are of stone in the lower part, and of bricks above. The whole of the filling in of the pyramid bulk between the walls is of mud-brick.

Much ancient tunnelling has been done in search of the chambers, between the rock and the brick structure; this part is honeycombed with forced passages from the N. side. Much of these I cleared out in search of the chambers, but in vain. Seeing that there was certainly no entrance in the brickwork, I then supposed that the stone lining of the chambers had probably been built in an open cutting in the rock as in every other pyramid that we know of. If so there would be a gap in the rock base, where the passage was built in; and I therefore set about clearing all around the pyramid at the edge of the top of the rock. This was easy enough around most of the circuit, being only a few feet deep. But at the S.E. corner it was very difficult, the rock being there defective, and the bulk being filled up with layers of rubble chips, thrown in and rammed down. Not being able to reach the edge of the rock therefore, I tested it in another way. Clearing a trench in the fragments as low as the rock bed of the pavement,

sometimes 15 or 20 feet deep down, and having seen solid rock, we then cut away the stuff above and tracked up the rock, or over the surface of the rubble beds of construction where I could be certain of their being undisturbed. Thus the whole surface of the pyramid core was searched here for the entrance: but yet in vain.

5. The case seemed almost hopeless; after some months of clearances we could not reach the chamber hollow either in the tunnels, on the top of the rock base, nor could we find any sign of an entrance on the outside. I had however made a clearing near the S.E. corner on the ground level, to find the position of the pavement; and having found an edge of rock, part of the pavement bed, I made the men track it along, greatly against their wills. We came on a pit on the S. side, but it was so far out from the pyramid that it hardly seemed likely to be more than one of the many rock shafts of tombs, which abound near the pyramid. As I was just leaving I did not therefore push on with it; but I commended it to Mr. Fraser, when he took charge of the place in my absence, as a possible entrance; or, if not that, a tomb which had better be examined. He opened it, and at about 40 feet down found a doorway on the north side which led up to the pyramid. The mouth of this shaft is very wide and sloping, having been much broken away by use, probably when the place was plundered for stone. We know, from graffiti on the blocks, that RAMESSU II destroyed the temple and the casing of this pyramid for stone; doubtless to build at Ahnas, where I have seen the name of USERTESEN II on a column of Ramessu. Probably therefore the masons removed the pavement of the pyramid; and, so doing, they would find this entrance. To their plundering therefore may be attributed the breaking up of the limestone chamber in the pyramid, and the removal of much of the stone. The well entrance is so dangerous that a Bedawi boy, who was looking about there after it was opened,

fell down the shaft, and was killed on the spot. The survey of the pyramid is unfortunately incomplete. The sepulchre and adjoining chambers, and the sarcophagus are completely measured; the passages are tolerably done by Mr. Fraser's measures, but the south end of the passage and details of the water well are doubtful. The connection with the pyramid above is vague; nothing remains at the pyramid base to define it, and a general survey of the pyramid all over is needed before an estimate of the original position can be made. This incompleteness of the plan arose from some weeks of illness at the close of the diggings, which prevented my doing active work.

6. On referring to the plan of the passages (PL. II) it is seen that the shaft now opened is not at all the main one. Another shaft must exist at the end of the south passage, as the granite sarcophagus is 50 inches wide; the south passage is 54 at the doorway, and the long passage not less than 63 wide, and the entrance to the chambers is 54 wide. So the sarcophagus would pass all these; whereas the doorway at the bottom of the used shaft is but 31 inches. The now-used shaft must therefore have been only a back way, to enable the workmen to pass in and out while the main shaft was blocked with lowering the stonework. At the end of the S. passage is a brick wall broken through; beyond that is a mass of blocks of stone and chips, which seem to turn to the west and to rise upward. Here then is probably the main shaft; but though I cleared much of the ground on the surface, which is encumbered with several feet thick of original banked-up chips, I could not find the top entrance. If it had not been for the second shaft under the pavement, it is probable that this pyramid would never have been opened.

7. The south passage is 734 ins. long; and about 7 feet wide and 4 feet high, but much encumbered with stone, so that it is difficult to crawl along it. The entrance chamber is 132 N. to S., and about 208 to the recess with the water well. This recess is 82 by 102 ins. and the well about 4 feet by 5; it is difficult to reach it owing to a long slope of earth which is above the well. The well itself is full of very salt water up to about the level of the chamber floor. Why such a well should have been made we cannot see. Probably the water level has risen with the rise of Nile deposits, and may have been 15 feet lower when the pyramid was built. The well was therefore perhaps a dry shaft. It may have been either to catch any rain-water running down the shaft above, like the safety wells in the tombs of the kings;

or it may have been a water well; or it may lead to some other passages below. It is doubtful even whether all the pyramid passages known may not be a blind, as there is neither a trace of a lid to the sarcophagus, nor of any wooden coffin or mummy in the chamber. On the other hand there are no elaborate precautions for barring the intruder, as at Hawara, and everything was trusted to the secrecy of the entrances. It is unlikely that there is anything of importance beneath this water well, as there seems to have been no care to cover over its upper part.

The passage into the pyramid slopes upward, as will be seen in the section, PL. II. The whole length slopes $6^{\circ} 46'$ from end to end, but the lower part appears to slope rather less, and the upper part more. The axis of this passage is $6^{\circ} 40'$ E. of magnetic N., which shews that it is probably very nearly true north. The limestone chamber was observed as $10\frac{1}{2}^{\circ}$ N. of magnetic W., and if so is 4° askew to the passage, and is so drawn here. The first part of the passage is 648 long on the slope: it is 64 wide, and 74 high on the wall, or 80 in the middle of the curved roof. It is cut in the soft rock fairly well, but the rock is so crumbly and poor that it is merely hard marl, and no smooth face can be made.

The passage chamber is 276 on S., 267 on N., 124 on E., 127 on W. It is heaped up with broken marl from the rock; though where such a quantity has come from it is hard to tell. The upper part of the passage is 894 long, 76 wide, 69 high on the wall, and 79 in the middle. At the top end it is roughly smeared with a thin coat of white plaster, filling up all the roughnesses. It contracts to a doorway 54 wide and 70 high on entering the limestone chamber. Throughout these passages therefore there is no need of stooping, but they are made of full height, like those of the Hawara pyramid.

8. The limestone chamber is cut in the soft marly rock, and lined with blocks of fine limestone. The roof-blocks, and part of the top of the walls, have been broken up, and lie strewing the floor; a damage probably due to the Ramesside masons. The chamber is 123.7 E., 122.8 W., 196.7 N., 195.3 E.; the wall height is 136.2, and the pointed roof rose 37.3 more, according to the piece of the gable end wall which remains, making 173.5 inches in all. The doorway is 5.6 to 59.6 from the E. On the west is a contracted part 81.2 wide; leaving 20.7 on N., and 20.9 on S. side. This is 41.8 N., 41.3 S. length: and contracts to a passage, leaving 5.8 on N., 5.6 on S. This passage is 159.9 long to the granite, and 19.0 of

granite, making 178·9 inches. The width is 69·6 at E., to 69·3. On the south side at 34·5 is a passage 41·3 wide: this is 16·0 long, and then widens to 52 for 413·4 inches. This passage is cut in the marly rock, with a curved top, and is 70 high at sides, 79 in middle. It then turns to the west for 698·6 inches, being 62 high or 72 in middle. Then turns to the north for 783 inches: then to the east for 331, and then to the south for 293, opening into the sepulchre, by a regularly permanent doorway in the granite with bevelled edges. This passage is most puzzling, as it has no branches, and merely leads round to within a few yards of where it starts. There is no sign of either end having been blocked up; nor is there any sign of a door or closing of the sepulchre doorway. The sepulchre is all of light-red granite, smoothly dressed but not ground or polished. The sides are 123·1 E., 123·7 W., 206·2 N., 206·9 S. On the east is the entrance 61·1 wide, with 31·0 wall on each side. On the north is the doorway of the passage just named, at 10·1 from the west, and 41·6 wide. On the south is a doorway at 32·3 from the east wall, and 41·1 wide. This is 20·5 long through the granite, and then widens to 45·2 for a length of 89·0, cut in the marly rock. It is 62·8 at side and 72·8 high in middle. It then enters a chamber 126·4 on E., 129·7 on W., 105·4 on N., 104·2 on S. This chamber is 70 high at the E. and W., and rises to 109·6 in the curved roof. In the west wall is a recess 40 by 21 inches, and 20 high. This has been cut later, probably by the Ramesside workmen, as it is not smeared with plaster like the chamber, and is hewn with a pick or chisel 1·1 wide, whereas the pyramid hewer's pick was 55 inch wide and much rounder.

To return to the granite sepulchre. The floor is of granite; and, where the door sill has been broken away, a bed of clean sand between the granite and the rock can be seen. The ceiling is of granite; sloping blocks butt one against the other, and are cut out beneath into a circular curve, which rises 40·8 with a width of 123·3. The upper sides of the blocks are left rough hewn and straight. This construction is exactly like that of the sepulchre of Menkara at Gizeh. The height of the doorway is 81·9; the wall is 72·0 high on N., 72·8 N.W., 71·7 S.: the middle is 110·9 high at E., 111·9 in middle, 112·0 at W. The north door is 51·9 high at the sides, and 59·6 in middle. The south door is 51·0 high at sides. All the doorways have bevelled edges. The sarcophagus stands 10·36 at S., 10·66 at N., from W. wall; and 6·38 at E., 6·58 at W., from S. wall.

9. The sarcophagus is perhaps the finest piece of mechanical work ever executed in such a hard and difficult material. The form is quite unlike that of any other coffin known, having a wide lip all around the top. (See the end view on PL. II.) Another strange peculiarity is that the bottom is of varying thickness; or the inside depth being equal all over, the outside depth slopes down nearly 4 inches from end to end. As the sides are cut square with the top, and the floor is level, the ends all lean over, and the top slants; in short the whole thing is tilted by standing on a sloping bottom. I carefully measured it by stretched threads and plumb lines, with offsets read to a thousandth of an inch. The surface, though not polished, is smooth-ground to an impalpable fineness, and most exquisitely flat. For instance along the top length of 106 inches the errors from a straight line are - 7, + 5, + 17, - 7, - 7 thousandths on E. side; and + 7, 0, - 13, - 3, + 7 on W., or an average of 7 thousandths of an inch of error. On the ends 50 inches long, the errors are - 1, - 3, - 1, + 5, 0; and - 6, + 8, + 5, - 7, average error 4 thousandths of an inch.

The errors of parallelism are also very small; the N. end is 50·053, and S. end 50·073, or a 50th of an inch of difference on 106 inches length. The E. side is 106·100, and the W. 106·116, or a 60th of an inch different. In the lower part of the outside there was not such excessive care, and the average error is 37 thousandths on the distance from side to side, including the errors of forming the planes, and of their parallelism. But even this is fine work on such a scale. The inside is also very parallel; the width at the N. being 26·542 and at the S. 26·552, or only a 100th of an inch slant. The curvature of the planes is almost nothing, over the length of 82 inches; the E. side hollowing 5, and the W. side bulging 2 thousandths, a difference which is probably covered by the errors of measurement, owing to a slight tilt of the sarcophagus sideways. The ends cannot be accurately measured by plumb line owing to the great tilt endways. The skew of the planes of the inside is 5 thousandths on the W., and 7 thousandths on the E., which again may be confounded by the slight tilt of the whole sideways; but it is almost inappreciable in any case.

Lastly, after straightness, flatness, and parallelism, there is the question of ratio between the dimensions, or accuracy of proportions. This is far more difficult, as it requires all the previous accuracies, and in addition a truly divided scale, and an irremediable

truth of work, since nothing can be corrected by removing more material. Taking the mean dimensions we see that they are all in even numbers of palms of the usual Egyptian cubit, as follows :—

	inches		palm	cubit	mean scale	error
Length top out	106·116	+36	2·9477	20·634	106·056	+·060
below	97·165	+33	2·9444	20·611	97·218	-·053
Width top	50·046	+17	2·9439	20·607	50·082	-·036
below	41·24	+14	2·9457	20·620	41·244	·00
Length inside	82·495	+28	2·9463	20·624	82·488	+·007
Width	26·549	+9	2·9499	20·649	26·514	+·035
Depth	23·56	+8	2·945	20·615	23·568	-·008

The outside height is 36·4 at N. end, 32·6 at S. end ; or the bottom varies from 12·84 to 9·04 in thickness.

These variations in scale between the parts are very small. Lumping together all the measures, and taking the average palm, it comes out 2·9460, or cubit 20·622. Then we can find what each dimension should have been on a mean scale, shewn in the last column but one, and the errors of the sarcophagus sides are given in the last column. Thus the mean error from a true scale averages only 28 thousandths of an inch on one dimension ; or less than one 2000th of the lengths ; that is to say, the scale by which the dimensions were laid out, and the errors of workmanship of size, together do not exceed a hundredth of an inch on the cubit length. This is indeed a brilliant piece of skill in such an untractable material. It would be desirable to level up the sarcophagus, and then measure it more accurately when the planes are as nearly vertical as may be ; for doubtless some errors have come in the course of measuring it in its present slanting position.

A few additional measurements may be noted here. The depth of the lip around is 5·977 with a mean error of 22 thousandths. The edges are all bevelled off to a width of ·27 to ·30 of an inch. This bevelling is very neatly done, and the planes of bevel all meet truly in a three-sided pyramid at the corners.

10. In front of the red granite sarcophagus lay the white alabaster table of offerings for Usertesen II (PL. III). This is of the usual style of the XIIth dynasty altars, and not like the elaborate array on the altar of Ptahnefru ("Kahun," PL. V) ; nor are the legs of the animals missing here, as they are on the altar, and on the funeral vases of Ptahnefru and Amenemhat III. The inscription is simple, and of the usual formula. It is beautifully sharply cut, and quite perfect and fresh. Of course it is now in the Ghizeh museum, along with the finest of the other things that I found. It was standing turned up on

its end, when Mr. Fraser went into the pyramid ; disturbed, but quite uninjured. He had heavy work to get it up from the well, as it weighs four cwt., and is of course a delicate stone to handle.

Beside this some broken pottery was found strewn about in the limestone chamber (PL. IV, 7, 8, 11) all apparently of the XIIth dynasty, and therefore belonging to offerings made in the pyramid, and not to the Ramesside workmen. Also one fragment of alabaster, apparently the flat brim of a large circular vessel, was found in the passage leading from the limestone chamber round to the sepulchre. This passage was choked by falls of the roof in the N.W. angle of it ; but though we moved all that stuff and cleaned the place, no more of this alabaster vessel could be found. Doubtless the Ramesside workmen had carried off the alabaster vessels, though the table of offerings was too bulky for them to pilfer it.

11. Outside of the pyramid a shrine adjoined it on the east. This had been all destroyed by Ramessu II ; and the ground was covered with some feet depth of chips. On turning over all this stuff we recovered many pieces of sculpture ; some giving the names of Usertesen II, and others shewing the various offerings with which the walls of this chapel has been adorned. The work was beautifully delicate ; and the colours are as bright as when first laid on. The largest slab from here with a cartouche of Usertesen, is now at Ghizeh.

On the north and west sides the hill rose up, from the knoll on which the pyramid was built. Here it had been cut away, so as to leave a clear space around the pyramid. The face of this rock scarp is covered with a thick wall of mud brick, which still rises to twenty feet high at the N.W. corner ; originally it was probably much more, and retained a bank of chips behind it. Besides this scarp wall there was a built wall along the east side of the pyramid, of which the rock trench of the foundation remains ; and also a wall along the south, which served as a retaining wall, being banked up along the inside with chips, so as to form a level platform around the pyramid.

12. These walls were interrupted at the N.E. corner of the area, and extended outward, to include a small pyramid which stood there. This pyramid was of rock in the lower part, like the large pyramid ; and —also like that— the chamber is within the rock, without any open cutting above it. The brick part of the pyramid has all disappeared ; and when I went to Illahun there was no trace of the pyramid to be seen. But during excavations we hit on the side of

its rock base, and cleared it all round. A shrine had existed on the north side of it, and we found fragments of the painted walls like those of the shrine and of the temple of Useratesen. Also a fragment of an altar of offerings of black granite, but unfortunately no name remaining on it. (PL. XII, 8.) Among the fragments of the shrine was one which gives apparently part of the name (XII, 6), mentioning a "princess of both lands, Atmu"; as other princesses of this dynasty have the names of gods compounded with *neferu*, Sebeknefru, Ptahnefru, &c., this princess may be provisionally named Atmunefru. I tried hard to find the entrance to the pyramid; not only was all the top and edge of the rock core examined, but I also cleared the rock bed of the pavement all around the whole pyramid, for about twenty feet out from the core, but without hitting on the passage. Probably there is a well at some distance away from the pyramid, as in the pyramid of Useratesen. The rock base is about eighty feet square; and the cutting which marks the extent of the casing, is distant from the rock from 75 to 86 inches. The rock core is distant from the north wall 296, from the wall on the west 246; and from the edge of the pavement hollow on the west 186 to 199. All of this breadth was examined. The only result of the clearance was to find several pits cut in the rock beneath the casing, containing foundation deposits. The most important was at the N.E. corner. Here was a square hole whose corner was 4 ins. N. of N. side and 13 E. of E. side of the rock core. The hole was 36 square at top to receive a slab of stone 7 inches thick; below that it was 28 square, for a depth of 60 inches. This was filled with clean sand, and near the bottom lay fragments of many vases and saucers (PL. IV, 1 to 6, 9, 10, 14), with a model brick of mud (13), a few green glazed beads (12), and bones of a calf sacrificed. Of course our hopes were high that we had at last found the entrance to the pyramid, on removing this slab and finding sand filling below it; but the bottom of the hole was all solid rock. At the N.W. corner another hole was found, very similar to this: the inner corner is 16 W. of W. side, and 9 S. of N. side, thus not lying in the diagonal. The depth is 7 inches and 53 below that; and it is 35 square above and 30 below. Another rock pit was found at 100 to 130 E. of the W. side, and 160 to 190 N. of the N. side. This contained nothing but sand. And a fourth pit was found opposite the middle of the west side, which contained only one rough vase and saucer. These last two were covered over with mortar, and not with stone. Another pit on the east side had been

emptied anciently, and forced at the side toward the pyramid. Though these deposits are rude, and of no value beyond the forms of the vases; yet they are very interesting in principle, as we did not know before of any foundation deposits being associated with pyramids.

CHAPTER II.

THE TOWN OF KAHUN.

13. Last year only a small part of the plan of Kahun was published, merely five streets of the workmen's quarter. But now we have before us a complete plan of the whole present extent of the town, comprising more than three quarters of all the rooms that ever existed there, so far as we can judge. As this is the first time that the complete plan of an Egyptian town has ever been disclosed, we shall examine it in some detail; and it is of special interest, not only from the early date and the entireness of it, but from its having been laid out evidently by a single architect on a regular plan.

On first looking at the plan (PL. XIV) it is seen that the town is of two parts; the eastern part nearly as long as it is wide, and the western part which is built outside the thick wall, and which is a strip of closely packed workmen's houses. The west part is however of nearly the same date as the other, as such a barrack would never have been wanted here except for the pyramid builders: and its boundary wall is laid out to fit the line of the temple front. The geography of the place explains its outline; the Nile valley edge runs from S.W. to N.E. along the bottom edge of the town. The buildings are all in a slight hollow, bounded by a rise on the west, running from the temple across to the acropolis, and a rise on the north on which the north wall is built. The highest part of all the ground around is the acropolis, and the town is placed with this as the leading point.

The general divisions of the town are,

The acropolis and the guard house.

The five great northern houses on one plan, and one other, along the north wall.

The three great southern houses on one plan.

The dwelling houses joining the west wall.

The store rooms behind the great south houses.

The workmen's streets " " " "

The five workmen's streets on the east.

The eleven workmen's streets in the separate western region.

14. The acropolis has most unfortunately been far more destroyed by denudation than any other region, as a natural consequence of its elevation. On the west the ground falls gently away; on the north it falls irregularly; and on the east and south sides it has been scarped away, and faced with a massive retaining wall, which formed the side of a banked-up platform on which the buildings stood. Thus the grand quarters were well above the roofs of all the other houses of the town. The access to this acropolis was by one entrance at the S.E.; here the doorkeeper's room is first seen on the right hand; then a square entry, out of which three stairways arose. The wider stairway on the east (PL. XVI, fig. 1), had a separate door to it, and was the front entrance, leading probably to rooms overlooking the town eastwards; while the two lesser stairways (PL. XVI, fig. 2) probably led to the back rooms. The whole acropolis was occupied with one great house, as its space is exactly the same as that of the other great houses in the same line. Many pieces of brightly painted dado were found here, in the rooms with stone bases of columns. Though the lower part of the scarping is hewn in the solid rock, yet it is all faced with brickwork, plastered over; and even the steps are of brick, and so very little worn away that they shew the place not to have been occupied for long. These stairways were all filled up with fallen walls, and were quite indistinguishably smoothed over in the slope of the hill, until we excavated them: about ten feet of rubbish had to be removed from the deeper parts.

On the south of the acropolis was an open space of ground at the foot of its great retaining wall. In this ground is an isolated building, which from its place before the entrance, was probably a guard house. Doubtless the king would occasionally visit the town, when inspecting the progress of his pyramid and temple; and he would rest in the acropolis, while his guard would have quarters before the door. This building was deserted early in the history of the place, as it was filled up with the broken pottery of the XIIth dynasty, thrown away by those who dwelt in the rest of the town. This agrees to its being an official dwelling, not needed after the pyramid was built.

The five great houses along the north wall are all on one plan, with such very slight modifications that we may ignore them. Four of these houses join in a row; then there is a narrower house of different plan, and lastly one more like the four others. The entrance is from the street on the south; a moderate sized doorway, which had a half round lintel of stone,

of which I found a piece lying in one entrance. The doorkeeper's room faced the door. On the left hand we pass along a passage leading to offices, guest chambers, and to the business rooms of the master apparently. Behind these, in the centre of the house is group of private rooms opening on a hall with four pillars. Behind this again is a large space which was probably open to the sky along the northern part with a colonnade along the south side, to give a broad shady place for sitting in the summer time; what is now known as the *mandara* or reception-hall for strangers. There was also a direct access to this *mandara* by a long passage straight from the entrance. Besides this long passage there is another side by side with it: such a duplication would not have been made for nothing, and as the second passage opens on several small rooms, with a separate hall with columns, it is pretty evident that this was the women's side of the house. It had ready access to the front door, a private passage of its own, a hall, and direct access to the *mandara*. The rooms on the other side of the house seem to have been also private, as they open only from the *mandara*. They may have been the private chambers of the master and his family; and containing the best hall, with a tank surrounded by columns, this is not unlikely. In the fourth house these private rooms were cut off, and joined to the women's apartments of the third house. The rooms along the north wall were probably long store rooms and granaries.

Thus there were three ways on entering; to the left to the men-servants' rooms, offices, and business rooms; or straight through to the *mandara*; or thirdly, to the right, to the women's rooms.

The large rooms all required columns to support the roof, as 8 or 9 feet seems to have been the longest roofing beam. These columns were usually of wood, to judge by the large diameter of the marks on the bases: and the lower part of one column, which stood *in situ* in the fifth house on its stone base, was an octagonal one of wood (see PL. VI, fig. 12). The stone bases were very wide and flat, like those carved in the rock at Beni Hasan, or like the model column found here (PL. VI, fig. 13). Some of the columns were of stone, octagonal (PL. VI, fig. 1), eight ribbed (fig. 11) or sixteen fluted (fig. 6). The capitals were either plain abaci (6) or brackets (1) or palm leaf form (7, 8); that the latter was known in the XIIth dynasty is shewn by the ape seated on a palm leaf capital (8), carved in ivory, now at Ghizeh, and dated to Amenemhat II by a cylinder found with it. The

best room in each house, the master's private court, had a tank of stone in the middle of the floor; this tank was about 14 inches square, and about as deep, in the middle of a square block, 5 ft. 3 ins. on each side (3 cubits), the tank and its pavement being all one stone. Similar places are found in poorer rooms, with the tank a separate box of stone, and slabs placed around it, sloping towards it. These places seem curiously like Muslim arrangements for feet-washing and ablutions before prayers; possibly the custom is ancient, and the Egyptians may have used these tanks for ceremonial ablution, and stood on the stone slabs. Around the tank-stone were twelve columns supporting the roof; and it seems very likely therefore, as there would be a wide space across the tank, that the middle of the hall was open: thus the arrangement would be somewhat like an *atrium* supported by columns. (PL. XVI, fig. 3.)

The whole size of the block of each house is 138 feet by 198 feet: and this area contained about 70 rooms and passages. The best hall is 29 feet square, and the *mandara* is 63 feet long. Thus these great mansions were by no means scanty homes for the high officials and nobles who had charge of the royal works.

15. We next turn to the three great southern houses. These are of exactly the same size as the northern row, but quite differently arranged. The entrance opens into a vestibule with a column. Thence a short passage leads immediately into the rooms of the house; while a long passage leads away to the back premises. Another long passage led along the opposite side of the house, from the middle of the house to the store-rooms at either end. And against the street wall was a compact mass of nine store-rooms forming a square block, three each way. The plans of these houses have been so much altered by being divided into tenements, and new doorways knocked through, that it is difficult to trace the full details in their present deficient state. We will next notice the dwellings or stores to the south of the acropolis, backing against the thick wall. These blocks are on one repeated plan. The set of copper chisels and hatchets, found in a basket, in the first season, lay in the second block from the south, in a room marked C. A copper dish with a central cup riveted into it, was found in the northernmost chamber next the wall; this is now at Ghizeh. In the same block are two or three rock-cut cellars, the mouths of which are marked by squares on the plan; between three of them is a rock-cut passage, which had been walled across by brickwork. These cellar-mouths were closed

by flap doors of stout wood, one of which was still lying in place. The largest of these cellars, with two chambers, was used in the late XIXth or XXth dynasty as a family tomb. The only name found in it was that of the lady Maket; and hence this is called the Maket tomb, and the contents are described as such in Chap. V. The large circles in this district are granaries of thin brickwork. Some of the best papyri of the XIIth and XIIIth dynasties were found in the middle block of these buildings.

Other sets of chambers, to the south of the first southern mansion, were probably store-rooms. They are on a repeated plan, but joined together so that one door suffices for twenty-three rooms.

Behind the other south mansions are some workmen's streets. The separate houses have about seven small rooms each. But in two of these houses some curious wall paintings remain. In the block behind the middle mansion, on a wall marked "paint" on the plan, is a curious subject painted in red, yellow, and white, with some amount of black filling in, on the smooth mud plaster. (PL. XVI, fig. 6.) It shews a large house, with a view of the inside on a level above the outside, a convention known in other Egyptian paintings. The form of the building is interesting. It appears to have been a series of arched chambers; much like some in this town, which were covered by a wide vaulting of brick. The ends of these chambers were walled up in the lower part, and closed with a lattice of wooden bars above. The larger space may perhaps represent the end of a longer gallery, which approached the spectator nearer than the others. In the view of the interior there is the usual group of a servant offering to his master, and various jars placed upon wooden stands. The piles of round objects may really represent a row of cakes on a table, here drawn one above another like the piles of objects on a table of offerings. The white space on the left is indistinct in the painting; but it probably is another building, with an arched doorway next behind the master. In another room in the block of building south of the east mansion is marked "Paint cols," where a columnar building is painted which is here drawn (PL. XVI, fig. 4). This painting is remarkable for the flat curve of the arched roof of the building, the short pillars filling in the tympanum, and the columnar front. This represents a structure more like a later Greek, than an Egyptian, temple; and the forms of the columns (given on a larger scale above) are not like any Egyptian columns so far as we know.

To the east of the southern mansions are several streets of workmen's houses. These were very small and poor, containing only four rooms each. In the second block at "XVIII" on the plan (PL. XIV), were found two bodies buried with three small but brilliant scarabs of the XVIIIth dynasty. The southern ends of all these streets have been washed away entirely by denudation; and half of the part that is planned here is only a few inches deep, just enough to trace the plan by. At the east wall is a gateway, with a porter's room by it. It seems strange that they should have troubled to make a gate here, if the town lay open to the south. And it would also seem strange if such a stout enclosure wall should have been built for no purpose. I am therefore inclined to suppose that although there is no trace now of a wall on the south side, that nevertheless the town was originally walled all around, and that the south wall and half of the east have been denuded away as completely as the south ends of the streets.

All the streets appear to have had a channel of stone down the middle; such was found in the long E.-W. street, and in several of the small eastern streets, and was therefore probably general. This channel is not deep, but rather a slight curved hollowing of the upper sides of the line of stone, which is about 22 inches wide. Probably therefore the street sloped down to the middle, like an old English street to the kennel; and thus occasional rain, and waste water from the houses, would be led off without making the street muddy. This is far the earliest example of street drainage known; and the system must have been general in Egypt at that age for it to have been used in a labourers' town such as this.

16. Lastly there is the large mass of streets forming the western division. These were evidently workmen's dwellings, at least in the northern part. The houses have four or five rooms each, with steps leading up to the roof. Each house therefore probably had an enclosed court on the roof, like a modern Egyptian dwelling, where fuel and straw could be stacked. Many of these houses contain granaries. The southern part of this region was excavated in the first season, and this part of the plan was published in "Kahun," PL. XV.

The roofing of the houses was usually made with beams of wood, on which poles were placed, and to these were lashed down bundles of straw or reeds. The mud plastering was then applied both inside and outside, and many fragments of this roofing were found in the rooms. Occasionally a barrel vault of

brickwork was thrown across the whole room. The upper part is so generally destroyed that we cannot often find any of the roof; but one large room in the western part of the town, and some of the rooms of the first north mansion (where the wall was preserved against the acropolis), shew us the brick vaulting. There is no evidence about centering being used to build the vault on; and probably where wood was so scarce as in Egypt, it would be a better and simpler plan to fill the chamber with sand, and lay the bricks on the sand until the arch was completed, emptying the chamber by the doorway. All of the doorways, so far as they are preserved, are arched over with semicircular arches, two courses deep of brick on edge. The spacing of the bricks on the outer edge, to give the voussoir form, is done by chips of limestone wedged in.

Rats were as great a plague in the XIIth dynasty as they are at present in Egypt. Nearly every room has its corners tunnelled by the rats; and the holes are stuffed up with stones and rubbish to keep them back.

CHAPTER III.

THE ANTIQUITIES OF KAHUN.

17. In the account of the objects found during the first season's work here, the principal classes of things have already been described, ("Kahun," chap. III). The present account therefore is supplementary to that; and we shall notice the various fresh objects found, without recounting those of the previous collection.

Many more of the incised pottery dishes have been found (see PL. V), and with fresh designs. The fish with lotus border (3), the lions (5) and other types are noticeable. But the object of these dishes is not at all determined. Their very rough surface seems to make it unlikely that any wet or juicy food should have been put in them. Another curious object is the coop (8) which is made of pottery, pierced with air holes, and fitted with a sliding door. It was not intended merely for a trap, as the number of air holes show: it must have been for retaining animals alive; and it seems very possible that it was for holding eggs in the hatching oven, so that, when the chicks came out they might not stray about, and could be carried away in the warm pottery cage without chilling. Though the modern fowl does not appear

to have been known in early times in Egypt, yet artificial hatching was followed in Roman times, and may perhaps have been the custom for duck and goose eggs from a much earlier period. This coop was found broken in the rubbish heap of the XIIth dynasty, north of the town. It had been partly broken while yet used, as a handle is missing from the top, and one hole has been choked with plaster in some repairs to it.

Several pottery stands were found, both of the form for holding dry food on a raised dish (IV, 18), and also for holding the porous water jars. Probably the jars oozed more quickly than the surface evaporated, as jars do now in Egypt; and a pan was needed to catch the filtered water which came through. These stands (IV, 15, 19) with rings set in them would serve this purpose. One piece of pottery has a fine smooth face applied to it, and clouded with black intentionally to imitate marble or serpentine.

The pottery trays of offerings have been again found (IV, 20, 23); and the latter one is unusually complete. The bull's head at the top, the bird, the haunch, and the two jars for wine, are distinct; while below are various flat and conical cakes, and the large radishes so well known still in Egypt. The spaces in front are for pouring out the drink offerings.

Of glazed pottery there is a fine vase (XIII, 19), with a network pattern in purple on a rich blue ground. This was found in one of the long passages of the south mansions. There is also part of a blue glazed doll like those found before (XIII, 20). The fancy beads are also curious (VIII, 14, 15, 18, 19).

18. The most important pottery is that on PL. I. This is called Aegean in general, without meaning that every piece is necessarily from the Aegean; but the majority are so, to judge by their material and decoration. The term Aegean is used to imply the Greek islands, and the coasts of Peloponnesos and Asia Minor, without the limitations of place and age implied in the name Greek.

We will begin with those pieces which are distinctly foreign. (1) is a black ware throughout, with a smooth surface; on that are bright yellow, red, and white patterns. At the top is the circle of dots and lines in white; * then yellow lines with red across them; then discs surrounded with dots, the regular Aegean design, in yellow; and below that yellow lines with red across. The colouring is very bright, without much binding, and easily rubbed off. It is quite

* Where in details the description differs from the colouring on the plate, the latter is in error.

different from any known on Egyptian pottery; and the characteristic disc and dots, and the rest of the pattern, are also quite un-Egyptian. In (3) we see the well-known wave pattern of the Aegean, which is unknown on Egyptian pottery. (4) is a fragment of regular Aegean paste, fine smooth hard brown, with a black iron glaze, and applied lines of red brown and white. (5) is decorated with white on smooth red pottery, like (3); it also appears to be foreign. (6) has the regular iron glaze of the Aegean, with a spiral blocked out by a white ground, and a line of soft bright red applied. (7) is a short spout from a dish, painted with white on an iron glaze. (8) is red pottery stamped in relief, and painted white and red. (10) is another piece of Aegean paste with black iron glaze and applied white. (12) is a similar pottery, part of a peculiar vase without any neck or lip, a round hole being cut for the mouth without even a thickening of the material at the edge. All of these pieces are non-Egyptian; and all were found in the rubbish heaps of the XIIth dynasty. So far we shall be all agreed.

19. But when we come to consider the age of these there is great difficulty. The external evidence seems clear enough, and some very strong proofs will be needed to contradict it. The rubbish heaps where this pottery was found are entirely of the XIIth dynasty. Not only every piece of pottery which I saw there is clearly of that age, but from their position no later people would have accumulated the heaps. The town of Kahun was built by the architect for the pyramid workmen; and when the pyramid and temple were finished the town was mostly deserted, and the people of the XIIth and XIIIth dynasties heaped up their rubbish in the deserted rooms. A large part of the rooms which we cleared were filled up with broken potsherds and rubbish. When therefore rubbish could be shot inside of the town so readily, who would have taken the trouble to carry it outside? The external rubbish heaps must belong to a time when the town was full. And their contents agree to that early age. But this Aegean pottery is found in and under these rubbish heaps, and therefore the evidence unmistakably shews that it must be of the time of Useresen II. That foreigners were living here at that time is implied by the fact that the greater part of the weights, and two of the three measures, found here are foreign weights and measures of Phoenicia and Asia Minor. And historically we know that the Ha-nebu or "lords of the north," who certainly mean Greeks in the later monuments, were

already known to the Egyptians. The question then rests thus: the external evidence is clear for the dating of this pottery to the XIIth dynasty; the foreigners of the Mediterranean were already known to the Egyptians, and were actually living in this town: and this pottery is distinctly foreign or Aegean. The only difficulty lies in Greek archaeologists objecting to any such early age for such pottery. We will return to the question of age after considering the other varieties.

No. (2) is probably Egyptian, but is of very curious decoration. The dark bands are blackish blue, and are thick body colours like all the others, laid on a massive coarse red pottery. Part of the same vessel was found in the XIIth rubbish heap. The pattern reminds us most of that on the early tomb ceilings, in imitation of woven stuffs. No such pottery is known in any later age. (9) is a bit of an Egyptian cup of XIIth dynasty, with barbaric markings in black and white. (11) is the shoulder of a vase like (16). (13) is a smooth brown pot, lipless, with a black circle joining a black base and black side lines, on either side, and two red lines down by the handle. It is quite un-Egyptian. All of the above were found in the XIIth dynasty rubbish heaps, and have therefore a strong certificate of age.

20. Turning now to other pottery found in the town we notice the curious vessel (14, 15). It is lipless, with merely a round hole for a mouth, like (12 & 13). The handle is like that of (12); and the pattern is evidently derived from that of basket-work. It was found in a chamber alongside of pottery of the XIIth dynasty. (16) is a type of vase which is not uncommon here; (19) belonging to the same, and shewing the pinched spout better; (11) shews the double handle of these vessels; (18) is similarly formed; and (17) though different material has the same handle. This type of (11, 16, 19) is wholly unknown in any later age in Egypt. (18) was found alongside of pottery of the XIIth dynasty in a deep chamber. Lastly there is the black pottery (17, 20, 21) the latter piece being whitened by concretions. This pottery is common at Kahun, many pieces having been found last year (Kahun, XXVII, 199 to 202). It was found also by M. Naville along with scarabs of the XIIth & XIIIth dynasty at Khataneh, deep down in burials which could not have been later disturbed. Its age therefore seems well assured; and it closely resembles in colour, form, and decoration the earliest Italian black pottery.

We summarise therefore that (1) Aegean pottery

is found in rubbish of the XIIth dynasty. (2) Black Italian pottery is found in the town of the XII–XIII dynasty, as in graves at Khataneh. (3) Other foreign pottery is found in the town of the XIIth dynasty.

21. Negative evidence in this matter is important. The pottery of the XVIIIth & XIXth dynasty is well known now at Gurob in this same district. Pottery of the XXIInd to XXVth is known in the Illahun graves. Pottery of the XXVIth is exhaustively known at Defenneh. And that of the Greek and Roman periods at Naukratis and Tanis. All these successive periods are well known to us in their manufactures. *But not one piece of these peculiar varieties has ever been found yet in any later period;* nor conversely has any pottery of the later ages been found in the rubbish heaps of the XIIth dynasty.

The main argument for a later date for this Aegean pottery is the fineness of the paste, and the high polish of the surface. No doubt these details appear like those of later times. But there is internal evidence contradicting a late date for these pieces. None are finer or thinner than (12 & 14). Now these belong to a class of vessel which is wholly unknown to myself, or to other students to whom I have referred, as ever having been found in historic pottery. The mouth is a simple hole without a lip, like a hole cut in a gourd. If such a type is unknown in Greek pottery, where can we match it? only so far as I know in the vase found in the Illahun pyramid (IV, 11) and in the earliest Amorite pottery of Syria. There I have found it in the lowest levels of Lachish about the beginning of the XVIIIth dynasty. Doubtless it may have existed before that, only Lachish was not yet built; but it is a type unknown to later ages. This evidence therefore shews that it must be earlier than the Mykenae pottery of Gurob, and not later than that.

22. Another line of evidence may be taken. We know now at Gurob that the style of the earliest Mykenae pottery, the false-necked vase (*bugel-kanne*) with plain bands, belongs to about 1400 B.C. (Amen-hotep III). That pottery is highly finished, with a bright polish and fine iron glaze of red or orange. Such was already the development of pottery in the Aegean at that age. Who knows what went before that? No one as yet has found anything to date before that in Greece. What state the Aegean civilization was in at an earlier date we do not know. It has nothing to do with the historic civilization of Greece; it is a branch of the bronze age of Europe, as much so as Hallstadt or Etruria. That this pottery