II

(aps)— Mastaba Types and Construction

The complete development of architectural forms ~~especially~~ can be traced only in the larger and more important buildings. This is especially true of tomb types in Egypt, where the true type of any one period will be found in the tombs of the wealthier class, where space at expense were not serious considerations. The builders of the smaller and poorer tombs while naturally seeking to follow the style set by their wealthier neighbors, were forced to make modifications in plan ~~or~~ because of the space available or use poor methods of construction or cheaper materials because of cost.

In our minor cemetery can be traced however certain gradually changes in plan which follow approximately the development of the ~~richer~~ more massive mastabas in the adjoining royal cemetery. In several examples changes were made in construction before completion, they were reconstructed

and re-used, or additions were ~~to~~ made to them later. These cause overlapping of types, but do not to any extent change effect the general change from the earliest to the latest form.

~~The describing the tomb~~

The description of the mastaba group may be divided under two headings: the superstructure and the substructure.

§ 1. The Superstructure. ~~Plan~~.

a. Plan

The earliest mastabas in this area are § 2091 and § 3030. In the first named the construction was a core of debris surrounded with a rubble retaining wall, probably with cross walls to divide the mass of rubble, and the whole cased with a wall of regularly coursed stones, each course set back 5 ~~-~~ 10 cm. from the face of that below it. This was the same construction used in the long series of IV dynasty mastabas just to the east. It may be that A formed an actual part of that series. Here however the casing was badly wrecked. The core was

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form off to be re-used in later mastabas, and ~~the~~ its northern end was rebuilt as a smaller mastaba, G 2092. In G 3030 the interior construction was the same, except that the retaining wall of the core stopped with rubble and finished with coursed stone. The casing was of brick. This mastaba was parallel to the ~~same~~ east series and was built at about the same period. No trace of any offering room remained to G 2091, but it is the eastern face, like ~~the~~ of the four common to the IV dynasty group. The same is true of G 3030. The small recess left in the eastern façade of the brick casing ~~is clearly a later addition connected with the brick casing and not part of the original scheme~~ may have been left to contain a stela, or an elaborate stone cased niche.

G 3034 was another early mastaba, which although of much smaller size, was built before the space became congested. It had a debris filling enclosed ~~in~~ with a brick wall. An offering room was built against

its eastern façade. G 3050
was probably the same shape,
although the offering room
found was a later rebuilding
after the mastaba G 3042
had been built. The traces
of its earlier offering room
can be seen in Pl. 9.
Even the smaller mastaba
G 2092 built on the older
one already described seems to have
followed this early type. Its offering
room was a little shorter
than the eastern façade. Afterwards another
room was added, whose
The first one was lighted
by a small window
in the north wall.

Surely one of these
examples is the serdab
mentioned in G 3030.
A niche in the core just
inside the retaining wall
and behind the above-mentioned
offering room would have
been ample.

The next step in the
larger mastabas was
the construction of a small
offering room inside the
line of the eastern façade

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near its southern end. It is a question whether we have a real example of this change of plan in the minor cemetery. In G 2084 such a recess had been left in the core (cf. Fig. Plan 1) but when the brick casing was put on this became the serdab. The well built stone cased mastaba G 2085 had a finely finished interior offering room (cf. EF 2 on Plan 1) but this was at the northern end of the eastern façade and therefore if of this period ~~not an exception to the rule~~ these two mastabas were the only examples of interior offering rooms of this type. Then developed the corridor offering room extending along the whole eastern façade of the mastaba but its earliest form this had a larger room at the southend opposite the principal niche. It clearly was an imitation of the offering room with an entrance corridor or passage to the north. The best example was G 3033, which was built with this plan entirely uninfluenced by ~~the~~ any existing

tombs in its neighborhood. Built throughout of brick and with the ~~two~~ corridor portion vaulted, the niche had ~~a vaulted~~ niche semi-circular roof which carried ~~the~~ part of the main vault above it (BC 3-4 on plan 1 ≠. and Pls. 17-19). ~~Both~~ the alcove was lighted by a small square window in the east wall, at ~~was~~ or the north ~~end~~ of the corridor. Another brick example of this type was G 2093 (E4-5 on plans 1 and 2). A stone example was G 3011 (C5-6 on plan 2). In the former ~~these~~ mastabas the structure was built into the main ~~niches~~ later by closing up one of the niches with a new stone stela. In G 2093 a regular mastaba was built behind the main niche, vaulted with corbelled stone and roofed with slabs. A small window opened into the central ~~niche~~ division of the niche (cf. Fig. 77 on p.).

The use of a regular mastaba superstructure seems to have become a matter of convenience.

When the cemetery ~~became~~ space became limited, and mastabas had to be built in ~~certain~~ such spaces as were available,

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the above at the south end was determined by the already existing mastaba being a part of a definite plan of which ~~A was~~ was only ~~here~~ possible. ~~A was~~ G 2086 was a good example. The space here was so cramped that this mastaba was built against the north end of G 2085 and its corridor ~~was~~ occupied the space ~~where~~ behind G 2084. The irregular space ~~that~~ left between G 2083, 2084 and 2085 was utilized for the ~~last~~ another unexcavated mastaba at the north made it necessary to carry the corridor around the northern end to get around it. Here just outside the wall was built a small roofed with slabs (F1 on Plan 1 and Pl. 30) Another example of this later above type was G 3036, where the existing ~~of~~ of G 3033 conditioned the plan of the offering room (B 3-4 on Plan 1). ~~This type extended into the VI dynasty.~~ ~~the late VI dynasty tombs in the~~

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The ~~still earlier~~ development of the plan was the use of a simple corridor along the eastern façade as the offering room. This had the entrance either on the north, east or south as most convenient. ~~G 2024, which from its peculiar orientation, built to catch allow access to G 2033.~~ The offering room was built as part of the plans and had either its own enclosing walls or the narrow space behind some earlier structure was utilized in which case the roofing rested on the older wall. In the case of stone masonry this rear wall was occasionally faced with new stones before the roofing was put in place. (G 3013-14 in C 4 on Plan 1) ~~At G 2010~~ In this ~~group~~ type well built cradles sometimes occur, but they had no ~~third~~ regular position. Down to the time of the beginning of the simple corridor type, the shafts were arranged on the main axis. In the earlier types there were one or two shafts. These gradually increased. Toward the end of the period we find occasionally odd shafts off this axis anywhere the ~~space~~ size of the structure permitted.

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With the corridor type begin the use of the multiple system or regular grouping of shafts. This was clearly the result of congestion and the necessity for setting as many shafts in the available area as possible. The two best examples are G 2096 (DE 4 on Plan 1) and G 3004 (D 3 on Plan 1). The latter ~~was~~ cut off the direct access to all the mastabas to the east of it. G 2096 was built over the end of an earlier mastaba ~~complex~~ G 2095. ~~G 3~~ probably part of Both are among the latest mastabas in the cemetery. To these offering rooms were built according to the space, and no regular plan was followed. Finally the remaining space between mastabas and even the offering rooms, was used for single burials. In some instances new shafts were cut in the cores of old mastabas and tomb chambers built in shafts which had ~~apparently~~ never been used ~~in~~ their own period.

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b. Construction.

Again roughly following the methods used in the royal cemetery, we find here similar types of construction. They are

~~(Fig. 1)~~: I. a Filled mastabas, debris filling with brick facing wall.

b do. with stepped stone casing

II a. Cored mastabas, having an inner structure with debris filling enclosed in a rough rubble retaining wall. This one ~~faced~~ with brick

b. do. do. ~~faced~~ with stepped stone casing

III. Mastabas of solid brick.

(Insert here Fig. 1)

Fig. Types of mastaba construction. No scale.

The filled mastabas were the simplest and most easily constructed and therefore the cheapest. ~~This~~ like I a type ~~facing~~ walls. ~~c~~ were constructed of bricks always laid with a batter on the exterior and the thickness kept constant from bottom to top. In some cases, the niline was vertical so that the wall decreased in thickness towards

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to top where the pressure of the filling was least. ~~The core was then finished at the sides~~ ~~first~~ In this case the filling could be put in after the walls were completed. When the walls were the same uniform thickness throughout, the filling was packed in place as the walls were built. The filling ~~was~~ F was of mixed limestone chips, small stone and other debris well rammed down. The exterior of the sloping face was plastered with mud and stuccoed with fine white plaster. In the I h. the debris filling was always put in place with the courses of stone.

In the core type, the rubble of construction facing and the filling formed together. The rubble masonry from 50 - 70 cm. thick of rough ~~flat~~ stones ~~roughly~~ laid in mud mortar, small chips being inserted in the chinks. The face was usually then plastered with mud, but not always, before the casing was put on. ~~as some~~ ~~plastered cores never~~ had the casing put on

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and others not pleased were cased,

It appears that the rubble was plastered when the casing was not to be built immediately but that when the casing was to go work on the casing was proceed to go forward at once. This protection of the rubble face was not thought necessary. The casing C was built like that in Type I. the latter was laid up with good mud joints at all spaces between them and the core facing filled in with mud. The stone casing at the greater spaces behind A, were filled packed with bits of stone, chips, and mud. The casing stones themselves were sometimes laid in mud, but in the better built masonry, in a hard pinkish plaster. Two modes of dressing were employed. In the greater number of stone cased mastabas, the stones were courses set stepped, each course set back from the one below it. The stones had rough vertical faces. (G 3011 (offering room face) G 3031) and the casing was not stepped as the stones fitted only at the joints, the faces being roughly convex.

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The classification ~~of~~ III as a separate type was made to include afterthoughts, such as G 2081, G 2083 (original structure), G 2096, G 3024, etc., which were constructed throughout of brick, with no apparent filling. This construction was however the result of size and not intention. The ~~walls between the~~ walls were too thin to permit of filling being used. Otherwise these would have been merely type I a.

Just as in their plans, types of construction were rather loosely adhered to. Here again questions of expense or even time had to be considered. Often a mastaba begun in one style was finished in another. Thus G 2086 was planned to have a stone casing, but only a single course along the face was completed and the mastaba finished in brick. Another hint sometimes happened that the owner changed his scheme. Thus G 3035

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a well built mud brick mastaba, had had a fine stepped casing built ~~against~~ along its main ~~f~~ eastern façade and continued partly around the southern side. The northern end was not cleared and it may have extended around that end as well.

The shafts were lined above the rock surface with brick or ~~sub~~rubble. As a rule ~~the~~ ~~shafts~~ had both brick and stone casing core mastaba ~~shafts~~ had rubble the lined shafts plastered with mud, ~~and~~ Brick faced ~~and~~ filled mastabas had brick lined shafts and stone faced filled mastabas, rubble lined shafts. ~~This rule~~ ~~does~~ ~~fails~~ ~~but~~ ~~in~~ ~~some~~ ~~cases~~ was subject to some change and a brick faced mastaba might have shafts lined with rubble or ~~vice~~ ~~versa~~ especially when a change in facing material was decided upon.

C. Materials

The most extensively used material used was sun-dried bricks made in a rectangular mold. These were invariably mixed with chopped straw (tibben) ~~and sometimes sand~~. ~~The quality of the latter~~ ~~making them a yellowish color~~.

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The color varied from a dark gray (almost pure Nile mud) to a yellowish brown, where the clay was mixed with the yellow sand of the plateau. The earlier bricks were small, with the length 0.5 cm. to 1.0 cm. more than twice the width, to allow for the joint when bonding. The thickness bore no apparent ratio to the other dimensions, as the bricks were rarely laid on edge. When this was done, for example in making up for an uneven surface to make a level footing, a lavish use of mud mortar, with bits of brick and chips made up for any irregularities caused by the bricks. The later bricks were much larger, some as much as 44 × 22 × 18 cm. When used for the casing walls the bricks were laid as one, one and a half, or more bricks lengths thick, the lowest course was laid as headers, that is with the short ends out. The courses then alternated as header courses and stretcher courses, i.e. with long sides showing.

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The same system was followed in the linings of shafts and in the free standing walls of offering rooms.

When the mastaba was constructed wholly or largely of brick, only the exterior ~~was~~ were laid with any special care. The niches which formed the brick sizes ~~were~~ fairly closely were ~~on the same~~ built up carefully. ~~The~~ ~~backs behind~~ ~~and often~~ the backs of the inner face would also be carefully set. In the middle of the walls they were laid carelessly, plenty of mortar being used and bits of stone, etc. used to fill in.

Stone, outside of the fragments used for the filling was either rubble or ~~squared~~ dressed. Rubble was used for linings of shafts or retaining walls, was usually flat pieces with sharp edges. Smaller fragments filled up the crevices. It was all local ~~stone~~ nummulitic limestone. The casing stones were of the same

stone, roughly faced and dressed to fit on the edges. The ~~stone~~ joints ~~are~~ vertical joints fitted only on the exposed face and roughly levelled off inside. Facings of offering rooms ~~and~~ are the finer white limestone from the quarries at Turah across the Nile from Giza. These were dressed more nearly smooth and usually finished with stucco. Stele and libation basins and the niche blocks were of this better quality stone.

d. Decoration

All the work was plastered with a thick layer of mud mixed with straw and varying quantities of sand. Over this was a thin layer of white stucco. The interior of offering rooms was always so finished as some ~~faces~~ walls were found on exterior walls the whole extent. ~~may~~ have been so finished. The idea probably was to give them the appearance of stone like their finer and more costly neighbors.

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The stucco was very perishable and in few cases was preserved to any height above any large portion of a wall. Thus no details of any decoration could be made out except in the large stone offering room of Senefru-hotep (G 3008). In G 3024 new traces of color on the walls. The usual form of wall decoration was according to G 3008 as well known from other examples elsewhere (for example the Queens Hypenia temple of Hypenia) was a dado about 60-100 cm. high of black. above this the wall was white with sometimes a smaller band of yellow with narrow black edgings just above the dado. The offering scenes were in color drawn in paint with red. Human figures were drawn in recording to certain rules and with certain proportions, which were marked out by horizontal red lines, as the offering room of Senefru-hotep was a good example of the method. (Fig. 2). On the next wall registers 3, 4 and 5 contained

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processions of ~~slaves~~ servants bearing offerings (cf. Pl. 55). The divisions lines in row 3 and 4 might have agree very closely, but 5 ~~has~~ slight differences in height, ~~has~~ shows several serious variations.

Division	Millimeters	Row 3 Height	Dif	4 Height	Dif	5 Height	Dif
Top of head		285	10	286	11	280	11
Forehead = bottom of wig		275	32	275	31	269	38
Neck		243	20	244	20	231	17
Breast		223	41	224	42	214	38
Elbow		182	45	182	44	176	38
Hip		137	47	138	47	138	48
~~Knee~~ Top of knee and below chin (approximately chin ~~bottom of chin~~)		90	90	91	91	90	90
Ground		0	0	0	0	0	0
Total height		~~285~~ 285	—	286	—	280	

The height of knee and hip agree closely in all three figures. ~~All~~ above this the division in 5 show great irregularity. ~~If this is the~~ ~~chin the chin of the knee~~ ~~the knee and the~~ ~~figures and~~ ~~the~~ ~~he discovered his error in height~~ ~~of the bottom of the~~ ~~after laying off his~~ The difference of 5 – 6 mm in total height can scarcely explain the disparity of the proportions, even if we suppose that the artist discovered that he had made his lower head too narrow

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§ 2. Substructure

a. Shafts

The shafts were ~~the rock after the superstructure of the mastaba was built~~ the last portion to be made. A number of mastaba have one or more of the shafts in various stages of completion and. In G 3022 none of the shafts was cut below the surface and in G 3023 only A with two chambers, was completed. The Giza sheet that the plan of the mastaba was laid out in brick- work or rubble, as the type might be and the building finished, leaving of course the ~~11~~ built shafts uncov- ered. ~~Then as they were needed the rock was cut away from one shaft after another to the required depth.~~ The rock was quarried out by first cutting a groove around the side of the opening, wide and deep enough to manipulate easily the tool. The central part of the rock was then split off. ~~was~~ probably like as else- where, with wooden wedges inserted dry and then wetted. This process of splitting off in horizontal layers was continued until

the proper depth was reached. The debris was used for the filling of other mastabas in process of construction. It probably was intended to sink the shafts with vertical sides, that is to keep the area uniform from top to bottom. It was however exceedingly difficult to do this and the care and labor necessary was not practicable for these smaller tombs.[1] As a result

[1] These remarks do not apply to the larger mastabas in the royal cemetery. In them great pains were taken to construct exactly symmetrical shafts with often very beautifully laid masonry linings. The shafts too were completed before the final exterior casings were put on.

the rock portions were very irregular. As a rule the bottom was somewhat smaller than the top, but in a few cases ↑ the dimensions ★ indeed and in some remained practically the same.

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In ~~shaft X of~~ G 3020 the shaft X twisted as it descended (cf. C 6 on Plan!). This may have been intentional, as the workmen ~~opened~~ discovered ~~through~~ the presence of the eastern chamber in G 3011 A and wished to avoid ~~it, and~~ ~~in shaft so that~~ their ~~shaft~~ ~~chamber~~ ~~must not~~ break ~~through~~ breaking through into it.

b. Chamber

The position of the chamber in the older period was south. In this cemetery in G 2091 and Bur C of G 3030 this ~~position was~~ arrangement was followed. With the development of the ~~the~~ small mastaba with its series of closely arranged shafts on the north-south axis, it would have been difficult to construct ~~south chambers. that~~ ~~one shaft to~~ or in that case the depth of the various shafts would have had to be regulated to the chamber ~~and~~ breaking into the next shaft. ~~It became the rule to use chambers on the west but this was not strictly observed~~ Thus the chambers were cut at the west

side of the shaft when practicable,
and sometimes at the east when
to ~~build~~ place them at the west
would have interfered with some
existing chamber or line involved
the sinking of two deep shafts.
The chambers were ~~at first~~
~~built made roomy enough to~~
~~contain a large wooden coffin~~.
square and of sufficient size
to contain a large wooden coffin.
Later in the ~~XVIII~~ ^current^ ~~type~~ types
a pit was often used in the floor
to contain the body, and then roofed
off the interment with stone
slabs. The smaller mastaba
often had hurriedly cut chambers
probably intended to be rectan-
gular but left with ~~unfinished~~
corner and ends. (Insert 2 3 A) the method
of quarrying was exactly the
same as used in the shafts.
After the door opening was
cut, ~~grooves~~ ^channels^ were cut ~~for~~
~~coming the line of the footpace~~
~~made at the back~~ a split
~~off~~ first to cut out the central
mass and then following
the lines of the walls. ~~The~~
~~surface~~ all

Insert 2 3 A: The chambers were entered by a shaft, usually beginning underground at the end of the pit in the manner of a mine (cf. pl. 36)

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The shafts of mastaba G 2093 showed how the presence of one shaft or chamber influenced the construction of a subsequent one. Here the shafts were sunk in regular order from south to north. Shaft [II] was sunk to a depth of 5.05 m. and a chamber made at the south. Nothing in the vicinity interfering with this. Then another chamber [I] was formed at the west on the same level. When B came to be sunk, ~~A~~ there remained sufficient room between the roof of the other western chamber and the rock ~~beat~~ surface to allow a chamber to be made on the west and even carried south beyond the line of the shaft without interfering with ~~it~~ A. C was carried down ~~E~~ at the same level as B but ~~E~~ was a small chamber, which was placed somewhat north of the shaft. The masons ~~in~~ working in D did not, apparently, know of the existence of the chamber in C. When they had reached the same depth they began the chamber at the west. When quarrying towards

[1] This second chamber was probably an enlargement of an open shaft and chamber was finished.

the south they broke into the chamber of C. They left an open and carried started the wall further north. Again they broke through the wall, sounded their plans. The room was then extended towards the north (Fig.). This however cut off the doorway of the west on this level, and as the masons did not care to carry the shaft deeper, this chamber was made on the east.

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irregularities were cut off and the walls dressed down by chiseling (cf. Pls. 33, 35:4, 37:4, etc.). Bronze implements were used and the edges were sharpened on sandstone hones, one of which was found with the [illegible] stones of nothing upon it in the chamber of G.....

The doors were sealed with one or more slabs or blocks of stone (Pl. 32); a single [illegible] with a rubble wall (Pl. 34); or with brick (Fig. 88). In G 2090 A the door was sealed by a block of stone slanting against the lintel of the door and resting on another flat block. All the crevices were plastered tight, and probably this was done in every case, no matter what material was used. In A of G 3013, the door was recessed across the top and at the right side to receive the slab and make a tight sealing (cf. Fig. 80).

c. Burial

The burial positions obtaining throughout the minor cemetery with but few exceptions were as follows:

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Head: ~~face~~ north facing east. Sometimes placed on a stone or a brick as a head rest

Body: on left side. ~~Usually~~ Sometimes placed ~~usually~~ on back but leaning towards the left.

Legs: usually bent, the heels drawn up towards the pelvis. ~~The~~ The upper legs raised from the ~~abdomen~~ survival of the Pre-dynastic position closely drawn up against the chest to a position where they were at right angles or even at an oblique angle to the vertebrae.

Arms: ~~usually~~ sometimes up before the face, but in other examples resting on or clasping the knees and in a few cases straight down at the sides.

The amount of contraction of the limbs was influenced by the space and the body was probably ~~of the small chamber was probably~~ ~~bounded~~

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so placed as to get it inside the space.

Division millimeters

Division	Row millimeters	3 Height	3 Dif.	4 Height	4 Dif.	5 Height	5 Dif.
Top of head		285	10	286	11	280	11
Forehead (bottom of wig)		275	32	275	31	269	38
Neck		243	20	244	20	231	17
Breast		223	41	224	42	214	38
Elbow		182	45	182	44	176	38
Hip		137	47	138	47	138	48
Top of knee (below skirt)		190?	90	91	91	90	90
Ground		0	0	0	0	0	0
			285		286		280

~~The height of knee and hip agrees closely in all three figures.~~ as far as the

~~Above this the division in 5 show great irregularity.~~

the proportions were maintained.

Unfortunately only the ~~right~~ left

end figure in this row was

preserved entire, and the other

part of the next row. But in both these ~~figures~~ Artists ruled lines

1 artist ruling off ~~which~~ the error in

his ~~proportions~~ made by an

incorrect proportion

his figures ~~the~~ disregarding

the other red guide lines.