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# ZUM 70. GEBURTSTAG VON HERBERT RICKE



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# AUFSÄTZE ZUM 70. GEBURTSTAG VON HERBERT RICKE

VON

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MIT 35 ABBILDUNGEN IM TEXT, 5 FALTTAFELN FRONTISPIZ UND 20 BILDTAFELN

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# ABDEL MONEIM ABUBAKR AND AHMED YOUSSEF MUSTAFA THE FUNERARY BOAT OF KHUFU

#### INTRODUCTION

In 1951, the Antiquities Department began to clear the high mounds of sand and rubble covering the lower courses of the southern side of the Great Pyramid. These mounds, nearly 20 m high, blocked the way and hindered the construction of a road around the Pyramid. In May 1954, after almost four years of continuous work, the workmen reached the ancient surface of the plateau and discovered the southern enclosure wall and two oblong pits, extending in the east-west direction, each covered by 41 huge limestone blocks forming their ceiling. In the eastern pit the wooden parts of the funerary boat of Khufu were found; the second pit has not yet been opened.

Previous excavations had revealed the northern and western walls of the Pyramid precinct; the eastern wall is completely destroyed. Both the northern and the western wall are at a distance of 23.60 metres from the Pyramid, whereas the newly discovered southern wall was erected at a distance of 18.50 metres only. The walls were built of small pieces of different varieties of stone: limestone, granite and basalt, and were coated on both sides with mud plaster about 6 centimetres thick and then whitewashed with plaster. The thickness of the southern wall is 2.50 metres at the base, whilst the top as now preserved measures 2.25 metres. Some parts of this wall are still 1.60 metres high, but the original height probably exceeded 2 metres.

The enclosure wall was built on the southern edge of the two afore-mentioned pits which are hewn into the solid rock of the promontory at a distance of 17.85 metres from the southern base of the Pyramid<sup>1</sup>. A thick layer of compound ground covered the huge roofing blocks of the pits and extended southwards under the enclosure wall and under Mastaba No. IV of  $\underline{D}df$ -bwfwand Mastaba No. VI of the southern cemetery<sup>2</sup>. Both tombs belong to the earlier type of mastabas of the Giza cemetery. This naturally gives us a certain clue as to the time when the enclosure wall was built as well as regarding the construction and closing of the pits.

To fill in the gaps left by some blocks of lesser height, the thick layer of compound ground was spread over the limestone blocks, thus making the surface level with the upper edge of the pits. The compound ground was therefore of variable thickness. It was made of a greyish white powder of local limestone, containing small pieces of limestone, wood scraps (cedar and acacia)

<sup>1</sup> Z. NOUR, Z. ISKANDER, S. OSMAN and A. YOUSSEF, The Cheops Boat, Part I, Cairo 1960 (published by the Antiquities Department of Egypt).

<sup>&</sup>lt;sup>2</sup> H. JUNKER, Gîza X, p. 42.

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and charcoal fragments. This layer helped greatly in protecting the pits from destructive outside elements such as insects, humidity, etc. Moreover, the blocks were joined together by a thick layer of mortar, and finally the Egyptians poured a solution of gypsum and water over the different joints in order to fill in any tiny crevices. Thus the pit containing the parts of the dismantled boat was nearly hermetically sealed, and the result was more than expected. The wooden parts of the boat were as hard and new as if they had been placed there but a year ago, whereas, as we know, they were buried about 2800 B. C.

The pit was covered, as mentioned before, by 41 huge limestone blocks each measuring about 4.50 metres in length, 1.80 metres in height and 0.85 metres in thickness, and weighing between 15 to 20 tons. Pl. I A shows a photograph of these limestone blocks. The blocks rested on two ledges, each about one metre wide, placed at a distance of 3.45 metres from the bottom of the pit. The whole depth of the pit from the brim to the bottom is 5.35 metres, its length 31.15 metres and its width 2.60 metres. Pl. IB shows a photograph of the pit after removal of the parts of the boat.

# PRINCIPAL DIMENSIONS AND GENERAL DESCRIPTION OF THE FUNERARY BOAT OF KHUFU

The boat was placed in the pit not as a complete construction but dismantled, with its parts stacked in 13 orderly layers. Pl. 2 shows a photograph of the wooden parts of the boat as they were discovered. These wooden parts consist of 1224 pieces, the largest measuring 23 metres and the smallest 10 centimetres. Pl. 3 shows them after being removed from the pit and placed inside the temporarily erected shed. Most of these wooden parts are made of cedar wood imported from Lebanon, but the inner parts of the boat such as deck beams, deck sheathing and cabin are made of local wood: sycamore and sidder.

Thanks to the admirable skill, scientific handling and patience of Mr. AHMED YOUSSEF<sup>3</sup>, the boat was carefully reerected and stands now complete in its original form in a museum specially built to house it to the south of the Great Pyramid.

The erection of the boat was completed in October 1970. Fold-out I shows a drawing of the boat as we see it now in the museum. The hull of the boat has a streamlined shape. The stem is curved vertically upwards and has a papyriform ending, whereas the stern post, with the same papyriform ending, is bent inwards. THE PRINCIPAL DIMENSIONS of the boat were carefully measured after completing the erection; they are as follows:

1) Overall length, measured from the forward side of the stem to the after side of the stern post, was found to be 42.32 metres.

2) Maximum width was found to be 5.66 metres, measured nearly amidship, at the level of the upper deck at a position of 22.45 metres from the forward side of the stem.

3) Depth, measured vertically from the base line to the level of the upper deck planking at the position of maximum width, was found to be 1.78 metres.

<sup>3</sup> Director of the Restoration Laboratory of the Antiquities Department, who, as co-author, personally prepared all the drawings and photographs of this paper.

4) Maximum draft was found to be equal to 1.48 metres, measured vertically from the base line to the waterline at the position of maximum beam. The maximum waterline at which the boat would have floated was marked by a knuckle with a somewhat sharp edge on the outside of the side-planks. This knuckle extended along the length of the boat.

5) Freeboard, which is the difference between depth and draft, and which gives an indication about the boat's reserve buoyancy, is thus equal to 0.30 metres.

6) Height of the stem from the base line was found to be 6.82 metres and height of the stern from the base line 7.50 metres.

7) The deck has a noticeable sheer, and its amount forward was found to be slightly larger than aft.

8) The displacement of the boat only, which is equal to the weight of the boat and commonly named the light ship weight, was estimated at about 50 tons. The total displacement of the boat, which is equal to the light weight and the total dead weight, was estimated at 150 tons.

THE DECK ERECTIONS consist of the following items:

I) A deck-house extending from one side of the boat to the other, almost within the two longitudinal side-girders of the deck. Its length is 9.10 metres, its height 2.50 metres at the forward part and 2.17 metres at the after part, and its width is 4.14 metres forward and 2.75 metres aft. The after end of the deck-house is at a distance of 11.5 metres from the after side of the stern post. Fold-out plan I gives some idea of the dimensions and position of the deck-house. It is divided into two rooms: the anteroom, 2.00 metres long, and the salon, 7.10 metres long. A door of double leaves leads from the outside to the anteroom and a similar one from the anteroom to the salon, while a door of one leaf leads from the salon to the after part of the deck. Pl. 4 B shows the inside of the salon and the door of double leaves leading to the anteroom. The roof of the two sides of the cabin, there are 18 columns supporting arched beams about 15 centimetres above the roof proper. This outside construction was covered by thick mats hanging down over the two sides to form a double roof to ease the heat inside the cabin. Pl. 6 A shows the outside of the deck-house with the columns supporting the arched beams.

2) A long shed stretching in front of the deck-house, its roof also supported by columns and covered by thick mats. Pl. 4 A shows the shed and the position of the five propulsion oars.

3) Further forward, there is a small shed with the roof supported by columns. Its position is indicated in Fold-out 1. It is 2.20 metres long and 1.78 metres high. This small shed was used by the master of the boat.

Powering of the boat was effected by a set of five oars on each side of the boat, the longest measuring 8.35 metres and the shortest 6.58 metres. Each of these oars, as well as the two steering oars, was cut from one tree in a single piece.

Steering of the boat was effected by two oars, one on each side of the stern, their length being 6.67 and 6.81 metres respectively.

The boat was also provided with a fixed platform, 1.84 metres long and 2.08 metres wide, in order to bring the boat to any pier. The position of this platform is clearly shown in Fold-out 1 B.

## CONSTRUCTION OF THE BOAT

The boat was entirely constructed of wood. The wooden planks forming the main part of the hull consist of about 40 pieces, which vary in length from about 7 metres to about 23 metres. Fold-out 2 shows a drawing of the main wooden parts of the hull. The different planks were fixed together in such a way as to obtain a flush surface finish on the outside of the boat.

The boat comprised the following main constructional elements:

I) THE KEEL. The length of the flat keel of the boat is subdivided into three sections. The middle section is 12 metres long and 13 centimetres thick: It consists of three longitudinal planks joined together with lugs and ropes. The edges of the different planks are not completely straight, but have two or three knuckles to be used in adjusting the erection and securing the joints. The forward section of the keel to the bow side is 12 metres long and 13 centimetres thick. It consists of two longitudinal planks curved upwards to form the raised bow shape of the boat. The width of the two planks decreases towards the bow; their edges have three knuckles. They are joined together by lugs and ropes. The after section of the keel to the stern side is 12 metres long and 13 centimetres thick. It consists of two large longitudinal planks and a small one in between them. They are curved upwards to form the raising shape of the stern. The width of these planks decreases towards the stern of the boat. Their edges have knuckles and they are joined together by lugs and ropes. Fold-out 3 shows a scale drawing of the wooden parts of the keel and the two sides. The three sections of the keel are joined together by lugs projecting above the inner surface of the planks, as shown in Pl. 7 A.

2) THE SIDES OF THE BOAT. Each side of the boat consists of five rows of planks curved longitudinally and transversely to form the shape of the hull. They are placed adjacent to each other and joined by lugs and ropes. The first row next to the flat keel consists of three longitudinal parts joined together by scarphed joints. The second row consists of two longitudinal parts, the third of one plank, the fourth row of two and the fifth of three longitudinal planks. Scarphed joints, and sometimes knucked scarphed joints, were used to join all the longitudinal planks constituting the sides of the boat. The two sides of the boat are of symmetrical construction. The position of the scarphed joint in any row does not coincide with its position in any other row. The last row of the side planks has square grooves to receive the transverse beams of the deck. Fold-out 3 shows a scale drawing of the construction of the sides.

3) TRANSVERSE DECK BEAMS. Sixteen transverse deck beams of an almost square crosssection were placed at an equal spacing of approximately 39 centimetres in the forward part. After this row of transverse beams, there is a relatively larger beam which is followed by thirty-two transverse deck beams placed at the same spacing as those forward. The cross-section of the deck-beams forward is 10 by 10 centimetres, amidships 12 by 12 centimetres and aft 11 by 11 centimetres. These deck beams fit tightly into the respective grooves of the last row of the side planks and are secured by ropes. Fold-out 1 C shows a scale drawing of the plan of the boat giving the position of the deck beams. Pl. 6 A shows a part of the deck and the deck transverse beams.

4) COMBINED FLOORS AND FRAMES. Sixteen wooden transverse floors fitted above the keel

and extended along the sides up to the third or the fourth row of planks, in which case we may speak of a combined floor and frame type of construction. The floors are made of a single piece of wood, each of which takes the shape of the transverse girth to which it is fitted. They are shown in Pl. 5. These floors were held in position by ropes tied around them and fixed to the keel or the side planks. The spacing of the floors is not regular and they are distributed over the length of the ship. Pl. 5 shows how the floors were fixed.

5) LONGITUDINAL DECK GIRDERS. Two longitudinal side girders with a rectangular cross section were placed on top of the transverse deck beams joining them together, as seen in Pl. 6 A. Each ot fhem consists of two pieces joined by scarphed knuckle joints and has square grooves to receive the deck beams. These two side girders are curved longitudinally to take the shape of the boat and have a spacing from the top side edge of the boat of 52 centimetres forward, 59 centimetres midships and 48 centimetres aft. A longitudinal central girder was placed underneath the deck beams, with square grooves to receive them (Pl. 6 B). The central girder is supported by seven pillars of a rectangular cross-section, unequally spaced. In Pl. 6 B these pillars are seen in position inside the boat.

The deck area in between the two longitudinal side girders is sheathed by wooden boards, as seen in Pl. 6 A. Watertightness of the different joints of the boat was achieved by placing wooden logs of almost semi-circular section with their flat part facing the edge of the joint. They were kept in position by the ropes which were threaded along the full girth of the boat section. These logs are shown in Pl. 5, where they are placed along the longitudinal joints of the hull, whereas in Pl. 7 B we see them covering two scarphed joints of the side planks. Fig. I shows a typical cross-section of the boat and its main constructional elements.



Fig. 1 A typical cross-section of the boat showing the main constructional elements

#### METHOD OF FIXATION OF THE PLANKS

In order to fix the planks of wood together to form the main part of the hull, the following composite method was used:

1) The planks were initially held together in their respective positions by means of lugs. These rectangular wooden lugs were made to fit tightly into the respective holes in each of the

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two adjacent planks. The holes were made on the edge of each plank and extended a few centimetres into the wood. Fig. 2 shows a scale drawing of one part of the keel indicating the positions of the lugs.

2) Holes were made near the edge of each plank, not fully penetrating the thickness of the wood. They are inclined at an angle of about  $45^{\circ}$  and correspond to similar holes in the adjacent plank. Through each of these sets of two holes a rope was fitted and knotted so as to join the two planks together. Each of these holes is 2 centimetres wide and extends 11 centimetres along the length of the plank. The number of sets of holes in the whole structure comprises 291. Pl. 5 shows the primary fixation by means of ropes.

3) Similar but somewhat smaller holes were made to run in line at a longitudinal spacing of 25 centimetres and a transverse spacing of 10 centimetres along each plank and to correspond with holes made in all the other planks in such a manner that one rope could be threaded through the whole transverse girth so as to completely secure all the planks together. Each of these holes is 2 centimetres wide and extends 7 centimetres along the length of the plank. The total number of these holes comprises 895 in the keel, 1476 in the starboard side and 1529 in the port side. They are shown in Fold-out 2. Pl. 5 shows the ropes threaded through the holes, seen from the inside of the boat.

Other parts such as deck beams, combined floors and frames, etc. are held in place by ropes which are tied around them<sup>4</sup>.

## THE MASON'S MARKS ON THE SOUTHERN WALL OF THE PIT

The pit, hewn into the solid rock, is provided with ledges of one metre in width, running around its four sides. The surface of these ledges is approximately 1.90 metres below the upper edge of the pit. The depth of the pit from the upper brim down to the bottom is 5.35 metres, so that the distance of the ledges from the bottom is 3.45 metres.

There are ten marks of measurements painted in pink-red colour on the southern wall of the pit. Each of them has the shape of an inverted equilateral triangle, the upper horizontal side of which is formed by the hieroglyphic sign for cubit. Varying numerals are inscribed in them. It is quite obvious that these marks were intended to be drawn in one straight line, yet their distance from the edge of the pit varies considerably.

It must also be noted that in the middle of the ten signs, between No. 5 and No. 6, counted from the west, there are two signs one above the other. The upper sign can be read as 'h' "height" and the lower sign can be identified as  $\hat{ssp}$  "palm".

I have tried to find the meaning of these mason's marks and to detect a relation between the numerals and the place of the triangle on the wall, but without success. However, I am listing here in Fig. 3 the distances of these marks from the brim of the pit and from both ends of the wall.

<sup>4</sup> The engineering part of this paper was prepared with the help and cooperation of Dr. A. SHAKER SABIT, B. Sc. Ph. D., of the Department of Naval Architecture, University of Alexandria.



Fig. 2 After section of the keel showing the position of the lugs



Fig. 3 Signs on the south wall of the boat pit and a schematic drawing of their position

 $\mathbf{n}$ 

# THE QUARRY MARKS

Nearly all the huge blocks covering the pit show quarry marks, mostly written in pink-red, but sometimes also in black, samples of which are given in Fig. 4-6.

Some of the blocks have measurements for the length, width and height written in red colour on their lower surface. Yet it must be pointed out that these measurements do not coincide with the actual measurements of the same blocks. Naturally the ancient measurements are given in cubits (52.5 cm) and palms (7.5 cm). I have chosen five blocks with the ancient measurements and am giving here the accurate present measurements of each:

Block No. 4

A.	Length of the upper surface:	3.97 m	
Β.	Length of the lower surface:	4.00 m	8 cubits and 3 palms
C.	Width of the northern side:	0.78 m	
D.	Width of the southern side:	0.67 m	1 cubit and 1 palm
E.	Height of the northern side:	1.65 m	
F.	Height of the southern side:	1.65 m	3 cubits and 2 palms
	-		
Ble	ock No. 5		
A.	Length of the upper surface:	4.10 m	
В.	Length of the lower surface:	4.05 m	9 cubits
C.	Width of the northern side:	0.80 m	
D.	Width of the southern side:	0.79 m	1 cubit
E.	Height of the northern side:	1.32 m	
F.	Height of the southern side:	1.48 m	2 cubits and 5 palms
B1	ack No. 8		
DIG	JCK NO. 5		
A.	Length of the upper surface:	4.22 m	
В.	Length of the lower surface:	4.25 m	10 cubits and 2 palms
C.	Width of the northern side:	0.80 m	
D.	Width of the southern side:	0.75 m	1 cubit and 3 palms
E.	Height of the northern side:	1.84 m	

Block No. 13

A.	Length of the upper surface:	4.75 m	
В.	Length of the lower surface:	4.30 m	8 cubits and 2 palms
C.	Width of the northern side:	0.75 m	
D.	Width of the southern side:	0.78 m	1 cubit and 3 palms
E.	Height of the northern side:	1.46 m	
F.	Height of the southern side:	1.51 m	2 cubits and 3 palms

F. Height of the southern side: 1.80 m 3 cubits and 2 palms



Fig. 4 Samples of quarry marks on the roofing blocks

- a Block 4, lower surface
- c Block 5, upper surface e Block 10, upper surface
- - b Block 5, lower surfaced Block 8, lower surfacef Block 15, upper surface



- a Block 13, lower surface c Block 13, southern surface e Block 19, upper surface g Block 19, southern surface

- b Block 13, northern surfaced Block 17, upper surfacef Block 19, northern surface



Fig. 6 Samples of quarry marks on the roofing blocks

- a Block 20, lower surface c Block 35, upper surface e Block 38, northern surface
- b Block 30, upper surface d Marks on the keystone
- f Block 39, upper surface

Block No. 20

- A. Length of the upper surface: 4.35 mB. Length of the lower surface: 4.42 m8 cubits and 4 palms
- B. Length of the lower surface: 4.42 mC. Width of the northern side: 0.79 m
- D. Width of the southern side: 0.84 m I cubit and 3 palms
- E. Height of the northern side: 1.68 m
- F. Height of the southern side: 1.71 m 3 cubits and 2 palms

The gangs of workmen are mostly called '*prw dd.f.R*' *hk3* (gang of Djedef-Rê, the ruler) and also '*prw ntrw-nwb hk3*, a fact which shows that the blocks were cut from the quarry during the reign of Djedef-Rê, the immediate successor of his father, Khufu.



Fig. 7 The general carpenter's marks on the four sections of the boat

## THE CARPENTER'S MARKS ON THE HULL OF THE BOAT

In order to enable a quick and methodical assembly of the boat, the principal wooden parts were given special carpenter's marks. For this purpose the hull was divided lengthwise and transversely into four sections, each of which was given a general sign. The northeastern part received the sign  $\leftarrow \triangleleft$ , the south-eastern part was given four strokes ||||, the north-western was distinguished by a cross + and the south-western part by the sign  $\succ$ .

Each log used in the construction of the boat usually carries this general sign and in addition to it a special sign which is repeated on the adjoining log. Samples of these carpenter's marks are shown on plates 8 and 9.

## CONCLUSION

Ever since the discovery of Khufu's boat, it has been referred to as the "Solar Boat of Khufu". However, as appears from the following arguments, it may be more appropriately named the "Funerary Boat of Khufu".

The ancient Egyptians believed that Re, the sun god, crossed the sky from east to west in the  $m'n\underline{d}.t$  boat. Various gods accompanied the sun god in this boat and acted as his crew. Reaching the western horizon, he passed from the "Day Boat" to the "Night Boat", called mskt.t, and continued his journey through the Underworld to appear in the eastern horizon again at the beginning of the new day.



The two solar boats of Re played a prominent part in the Pyramid texts, which were inscribed on the walls of the burial chambers of the pyramids from the last king of the Vth dynasty, Unas, onwards. Yet the earlier kings of the same dynasty, who elevated Re to the rank of a state god, used to provide their sun temples with only one huge model of a solar boat. Built in mudbrick to the south of the temple, it represented a m'nd.t boat. This seems to indicate that the continuation of the god's journey after his arrival in the western horizon at sunset was not taken into consideration by these kings. The "Night Boat" was only introduced after a compromise had been reached between the solar religion of Heliopolis and the new cult irresistibly spreading all over the country during the VIth dynasty, namely the new religion of Osiris, the ruler of the realm of the dead.



goddess of the West (New Kingdom)

It is rather difficult to know when solar conceptions did penetrate the idea of kingship. The earliest evidence for such a tendency is the Horus name of King Re-neb (the second king of the IInd dynasty), whose name may be translated "Re is the Lord". Moreover, we know that Djoser of the IIIrd dynasty adopted a new title, which never occurred before or after him: "R'-nwb", which might be translated as "the Golden Re". From Djedef-Re, son of Khufu, onwards, many kings had names compounded with Re. Yet this should not be taken as evi-

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dence that the kings considered themselves as descendants of the sun god. This conception is not yet attested for the IVth dynasty. Only Papyrus Westcar, probably reflecting an older tradition, declares that the kings of the Vth dynasty were the sons of Re and of the wife of a priest of Re.



in the tomb of K3-nj-nśwt

In this case we have to admit that the kings of the IVth dynasty did not subject themselves to the dominant position of Re, therefore the idea of the solar "Day Boat" could not have played an important role. In this connection it is worth mentioning, that the Pyramid Texts, too, do not give the kings the right to have their own solar boats. § 1171 of the Pyramid Texts says: "O pure one! O Pepi! Take your place in the Bark of Re that you may traverse the ways of heaven and that you may mount to those who are far away, traverse the sky with the imperishable stars, and row with the indefatigable stars."

It is evident from the various representations of the solar boats of all periods, beginning with the huge solar boat of King Ne-woser-Re, built to the south of his sun temple at Abusir, the

determinatives for both the m'ndt and the mskt.t boats in the Pyramid Texts, to the small wooden models of the solar boat of the Middle Kingdom and lastly the different representations on the walls of the New Kingdom, that the solar boat has a special form which never changed throughout the long history of Egypt: It was always represented without oars, for it was intended to be towed by other boats. Its bow was always decorated with a rectangular box-like object, covered by a hanging mat, either of reed or of bead work. The rising stern post was usually curving inwards and then outwards again towards the top. The boat was also provided with particular emblems which varied only slightly in their composition.

The aforementioned points make it quite clear that Khufu's boat is not a solar boat:

1) The kings of the IVth dynasty did not officially adopt the dogma of the Re-cult.

2) The Pyramid Texts do not claim that the kings had a solar boat for themselves.

3) The form of Khufu's boat differs considerably from that of a solar boat, particularly as regards the bow.

4) Not a single one of the characteristic emblems of the solar boat was found in the pit which contained all the parts of Khufu's boat.

5) Khufu's boat was provided with ten oars and two steering oars.

6) There are some proofs that the funerary boat of Khufu has been used, e. g. the impressions of the tightly fitting ropes still visible on some of the logs assuring watertightness of the boat (Pl. qE).

We know that the excavation to the south of the Great Pyramid has yielded two huge boat pits; three other boat pits were discovered around 1922 by Dr. Reisner to the east of the same pyramid. Thus we know five boat pits connected with the funerary monument of Khufu, and the same number of boat pits were discovered by Dr. Selim Hassan to the east and south of the second pyramid of Giza, built by Khafra. The area around the third pyramid, of Men-kaw-Re, has never been fully explored, so we cannot say how many boats are related to it. The same may be said of the two pyramids of Snefrw (the father of Khufu) at Dashur. Of King Djedef-Re, son of Khufu and his successor, one single boat pit was found near his pyramid at Abu-Rowash. The area around the pyramid has, however, not yet been fully explored, so perhaps there are still four other pits to be discovered. Both, King Shepseskaf (son of Men-kaw-Re) and Queen Khent-kaw-s, left one boat each.

Since the newly discovered boat pit of Khufu contained a real wooden boat, one wonders if this might also have been the case with the pits found around the pyramids of the kings of the IVth dynasty. Reisner reported that he found at the bottom of the boat pit lying north of the causeway, to the east of the Great Pyramid, fragments of gilded wood and some pieces of rope, a fact which led him to believe that a real boat made of wood had actually been placed there. The other boat pits of the Giza cemeteries, two for Khufu and five for Khafra, were found completely empty, presumably violated in ancient times.

There is no doubt that the five boats of both Khufu and Khafra were funerary boats, part of their funerary equipment. In other words, they were to be used by the king in the hereafter for the same purposes as in his lifetime. I confess that it is quite difficult to explain for which purposes the five boats were used; nevertheless I am presenting here a hypothesis regarding their use.

There is a scene on the wall of the tomb of K3-nj-nśwt of the Vth dynasty at Giza showing two boats<sup>5</sup>. The text above the upper boat reads: "The coming from Buto and the sailing to the

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fields of offerings". The text above the lower boat reads: "Going to Heliopolis". The importance of scenes like these lies in the fact that they represent older royal rites in the funerary context of the tombs of nobles of the Vth dynasty; during the IVth dynasty, this would not have been permitted. The journey to Buto and to Heliopolis has to be considered as a sort of royal pilgrimage to two ancient cities, which played an important role in the religious ceremonies of kingship, but, I would say, not necessarily in a funerary context.

We assume that prehistoric Egypt was divided into many small kingdoms or city states, each with its own totem and local divinity. There were in the Delta a number of city states which were centres of a developed culture. About 4300 B. C., these cities were united under a single ruler, who may have been Osiris, and who conquered most of the important cities of middle and upper Egypt. The capital in those days was Heliopolis. Yet about 3500 B. C., this unity decayed and Egypt split once more into small states. Menes was the hero who ruled about 3200 B. C. and united Egypt for the second time. This unity was reached after a long and bitter struggle, the phases of which were subsequently regarded as an essential part of Egyptian kingship and were ritually repeated in the coronation rites. When Egypt was finally united into one kingdom, ruled by a single sovereign, it was necessary that the king should visit these ancient cities and receive from their patron gods the divine right to be the legitimate ruler of Egypt.

This should also be done in the hereafter. The cities of pilgrimage would be: I. Heliopolis, the most ancient capital of Egypt and the centre of worship of the sun god. 2. Sais, once the capital of the fifth nome of Lower Egypt, represented today by the ruins of Sa-el-Hagar. It was the centre of worship of the goddess Neith, the protectress of the Delta kings. The ruler of Sais belonged to the Bee-clan, and the bee became the sacred symbol of the kings of Lower Egypt. 3. Buto, to the south of Lake Buroles, now called Tell-el-Farain. It is assumed that the kings who united Egypt for the first time in prehistory began their struggle from Buto. Throughout Egyptian history, it was considered as the traditional capital of the Delta.

Thus the king was in need of three different boats to perform these pilgrimages in the hereafter, just as he had done in his lifetime.

The fourth boat was prepared to fulfil the various rites of coronation. It is amazing that rites for ascending the throne took place on board a huge boat moved to the Nile bank at Memphis<sup>6</sup>, and not in the royal palace or in a temple. This may go back to the first ascension to the throne of Upper and Lower Egypt by Menes, who was residing near the place chosen to build the new capital, *inb hd*.

The fifth boat could have been the boat prepared for the "Horus sons" who participated in the rites of the coronation, or else a boat for the transport of the royal body from Memphis to the necropolis of Giza. This would have to be done by water.

The three pits discovered by Reisner to the east of the Great Pyramid are different in their outline. One of them has been refilled with sand (this pit lies to the north of the funerary temple), the second is huge and oval (it lies to the south of the funerary temple) and the third is small and looks as if it represented a papyrus boat (this lies to the north of the causeway). The fourth pit is rectangular and contained the funerary boat of Khufu which looks like a travelling boat. We have to wait till the last pit is opened to know the shape of the fifth boat.

<sup>5</sup> H. JUNKER, Giza II, p. 156.

<sup>6</sup> K. SETHE, Ein Spiel zur Tronbesteigung des Königs, Untersuchungen zur Geschichte und Altertumskunde Ägyptens, Bd. X.