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à Jean
LECLANT



Hommages

V O L U M E 1

ÉTUDES PHARAONIQUES



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Hommages à Jean LECLANT

VOLUME 1

ÉTUDES PHARAONIQUES

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SOMMAIRE

ÉTUDES PHARAONIQUES

GRIMAL Nicolas

AVANT-PROPOS.

ANCIEN EMPIRE

ABOU-GHAZI Dia'	Certain Ethical Conceptions Relating to the End of the Old Kingdom.	1
ALLEN James P.	Reading a Pyramid	5
ALTENMÜLLER Hartwig	Das "Fest des weißen Nilpferds" und das "Opfergefilde"	29
ASSMANN Jan	Spruch 23 der Pyramidentexte und die Ächtung der Feinde Pharaos ...	45
BEAUX Nathalie	Sirius, étoile et jeune Horus	61
BERGER Catherine	À la quête de nouvelles versions des Textes des Pyramides, à propos des reines de la fin de l'Ancien Empire	73
BICKEL Susanne	Un hymne à la vie. Essai d'analyse du Chapitre 80 des Textes des Sarcophages	81
BROVARSKI Edward	Abýdos in the Old Kingdom and First Intermediate Period, Part I	99
COUR-MARTY Marguerite-Annie	Les Textes des Pyramides témoignent du souci de normalisation des anciens Égyptiens	123
CROZIER-BRELOT Claude	Supplément à une concordance informatisée des Textes des Pyramides	141
DOBREV Vassil	Observations sur quelques marques de la pyramide de Pépi I ^{er}	147
EDWARDS I.E.S.	Do the Pyramid Texts Suggest an Explanation for the Abandonment of the Subterranean Chamber of the Great Pyramid ?	159
ENGLUND Gertie	La lumière et la répartition des textes dans la pyramide	169
FISCHER Henry George	A New Sixth Dynasty Inscription from Naqada	181
GIDDY Lisa	Memphis and Saqqara during the Late Old Kingdom: Some topographical considerations	189
HAWASS Zahi, LEHNER Mark	The Passage under the Sphinx	201

HEERMA VAN VOSS Matthieu	Pyramidentexte Spruch 659 = P/F/E 34-38	217
HELCK Wolfgang	Die Datierung der Prinzessin <i>Wnš.t</i>	221
LABROUSSE Audran	Les reines de Têti, Khout et Ipout I ^{re} , recherches architecturales	231
MUNRO Peter	Bemerkungen zur Datierung <i>Mttj</i> 's, zu seinen Statuen Brooklyn 51.1 / Kansas City 51-1 und zu verwandten Rundbildern	245
OSING Jürgen	Zu Spruch 534 der Pyramidentexte	279
PANTALACCI Laure	Les mots composés dans le lexique des Textes des Pyramides : essai d'évaluation	285
PFIRSCH Luc	À propos des constructeurs de Têti, Pépi I ^{er} et Mérenrê	293
PIERRE Isabelle	La gravure des textes dans la pyramide de Pépi I ^{er} , les différentes étapes	299
POSENER-KRIÉGER Paule	Le coffret de Gebelein	315
STADELMANN Rainer	König Teti und der Beginn der 6. Dynastie	327
SWELIM Nabil	Pyramid Research from the Archaic to the Second Intermediate Period : Lists, Catalogues and Objectives	337
TROY Lana	Painting the Eye of Horus	351
VALLOGGIA Michel	Qila ^c al-Dabba : les partis d'une architecture de brique sous la VI ^e dynastie	361
VERNER Miroslav	Abusir Pyramids, "Lepsius no. XXIV. and no. XXV."	371
WISSA Myriam	Le sarcophage de Merenrê et l'expédition à Ibhāt (I)	379

NOUVEL EMPIRE

BERLANDINI Jocelyne	La statue thébaine de Kherouef et son invocation à Nout	389
BIERBRIER Morris L.	Rahotep in Durham	407
BIETAK Manfred	Kleine ägyptische Tempel und Wohnhäuser des späten Mittleren Reiches. Zur Genese eines beliebten Raumkonzeptes von Tempeln des Neuen Reiches	413
DECKER Wolfgang	Ein Amarna-Block mit Wagendarstellung	437
DONADONI Sergio	Una statua reimpiegata da Ramesse II ad Antinoe	449

DO THE PYRAMID TEXTS SUGGEST AN EXPLANATION FOR THE ABANDONMENT OF THE SUBTERRANEAN CHAMBER OF THE GREAT PYRAMID?

I.E.S. EDWARDS

Writers on the Great Pyramid have expressed conflicting views on whether or not its internal design underwent changes while the pyramid was being constructed.¹ There is, however, no disagreement with regard to the *unfinished* state of the subterranean chamber [fig. 1]. It resembles a quarry on which work had come to an abrupt end owing to some unexpected development. Also indicative of an abandoned project is the blind passage which leads out of the south-east corner of the chamber. Petrie described it as “very rough, apparently merely a first driftway, only just large enough to work in, intended to be afterwards enlarged, and smoothed”.²

For a very probable architectural parallel to the blind passage, it is only necessary to refer to the plan of the interior of Snofru’s northern stone pyramid at Dahshur, the immediate precursor of the Great Pyramid.³ In that pyramid the entrance-corridor leads directly to the first of two interconnected antechambers, slightly staggered but effectively in a North-South line and both having their floors on the same level as the base of the pyramid. A passage with its entrance high up in the south wall of the

1. More than a century ago Sir Flinders PETRIE expressed the opinion that the plan of the passages “was certainly altered once, and perhaps oftener, in the course of building” (*The Pyramids and Temples of Giza*, London, 1883, p. 214). L. BORCHARDT believed that the plan of the pyramid had been changed twice: in the first instance the so-called Queen’s Chamber replacing the subterranean chamber, and in the second instance the King’s Chamber replacing the Queen’s Chamber (*Einiges zur dritten Bauperiode der Grossen Pyramide*, Berlin, 1932). Egyptologists, in general, accepted Borchardt’s theory by and large, though J.-Ph. LAUER showed that one important modification was necessary (*Festschrift Rieke*, Wiesbaden, 1971, p. 133-141). V. MARAGIOGLIO and C.A. RINALDI, however, dissented from BORCHARDT’s reconstruction of events, saying “It seems certain, however, that at least the system of rooms and passages built in the body of the pyramid belongs to one sole project” (*L’Architettura delle Piramidi Menfite* IV, Rapallo,

1965, p. 150); they admit it is “undeniable” that the subterranean chamber was “only just begun” (*ibid.*, p. 148). R. STADELMANN expresses complete disagreement with Borchardt’s views (*Die ägyptischen Pyramiden*, Mainz, 1985, p. 111, 114 *et passim*; *Die grossen Pyramiden von Giza*, Graz, 1990, p. 109 sq., 127 sq. *et passim*).

The aim of the present article is to show that there is a simple reason, based on the Pyramid Texts and what is known of the development of the royal mortuary cult in the early Fourth Dynasty, for at least the decision to place the burial-chamber in the superstructure of the pyramid. It is submitted in gratitude and regard to the learned scholar to whom this book is dedicated, my long-standing friend Jean Leclant.

2. *Op. cit.*, p. 61.

3. See MARAGIOGLIO, RINALDI, *op. cit.* III, Tav. 18; I.E.S. EDWARDS, *The Pyramids of Egypt*, Harmondsworth, 1991, p. 90, fig. 25.

second antechamber gives access to a third apartment (with its main axis directed East-West), which was, in every likelihood, the burial-chamber.⁴ There can be little doubt that the subterranean elements of the Great Pyramid, if they had been completed, would have broadly conformed with that plan. It is a lay-out which was adopted, with minor variations, in the pyramids of Cheops's queens and throughout the Old Kingdom and later.⁵

A glance at the plan of the earlier of Snofru's two pyramids at Dahshur, the Bent Pyramid, will show that it has an approach to its lower chamber which resembles that of the Great Pyramid:⁶ the entrance-corridor is cut for almost its entire length in the rock, but its walls, floor and ceiling are overlaid with ashlar of limestone. Because of that overlay, it is not known whether the corridor was built in a downward-sloping trench or was tunnelled.⁷ The contrast with the northern stone pyramid at Dahshur is most marked: in that pyramid, by constructing the chambers and passages in the superstructure, much time and labour were saved.

Enormous difficulties were involved in boring a tunnel of the dimensions of the Descending Corridor in the Great Pyramid. It is 1.20 m. high, 1.05 m. wide and its gradient is about 26° 34' 23". The first 28.21 m. of the sloping corridor consist of masonry and the next 105.36 m. are tunnelled in rock. The corridor ends in a horizontal section which is 8.91 m. in length, 0.95 m. in height and 0.85 m. in width. The horizontal section is also tunnelled; it is estimated to be 30 m. below the base of the pyramid.

Constricted space for working was probably not the worst of the tunnellers' difficulties. Even more trying must have been the atmospheric conditions in which they had to conduct their work. Petrie, who was noted for his readiness to share whatever discomforts his men had to endure, wrote of his own experience in 1881-1882, "Work down at the bottom (of the Descending Corridor), with two lanterns and six men in the narrow, airless passage, was not pleasant; and my visits were only twice a day, until they cut through to the chamber". The men were merely removing the accumulations of rubbish and dried mud; the dust so raised would not have been as dense as that caused by hewing and smoothing the rock when the tunnel was being constructed.

Is it conceivable that a project on which so much effort had been expended would have been abandoned unless there were very strong reasons for taking such a step? The answer must be in the negative and it seems equally improbable that the physical strain imposed by the working conditions could have been responsible for the sudden cessation of activity on the part of the tunnellers. Because it would offer the simplest

4. The entrance to the passage is 7.6 m. above the floor of the antechamber.

5. See MARAGIOGLIO, RINALDI, *op. cit.* IV, Tav. 11; STADELMANN, *Pyramiden von Giza*, p. 167, Abb. 108.

6. See MARAGIOGLIO, RINALDI, *op. cit.* III, Tav. 11, EDWARDS, *op. cit.*, p. 79, figs. 19 and 20.

7. See MARAGIOGLIO, RINALDI, *op. cit.* III, p. 100. The chamber was certainly built in an open shaft, the top of its roof being placed on ground-level.

explanation, it might be tempting to think that a fault in the rock, which would have made further work unsafe, had unexpectedly shown itself, but if that were the reason the fault would still be visible, and since nothing of that kind has been discovered the theory can be discounted. A much more likely explanation is that the hypogean construction could not be adapted to meet an important new requirement in the mortuary cult, which had only emerged since Cheops ascended the throne and after a considerable amount of work had been done on his pyramid.

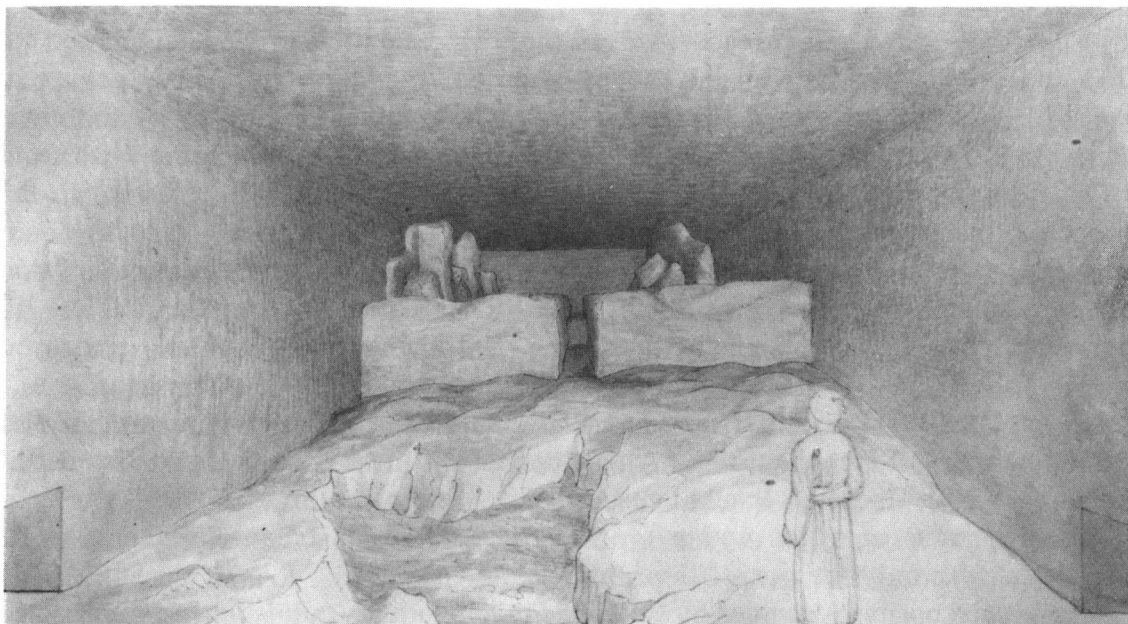


Fig.1.- Underground chamber in the Great Pyramid at Giza. Drawing by E.W. Lane, c. 1826.

(Reproduced by courtesy of the Griffith Institute, Oxford.)

Major changes in the Heliopolitan creed had undoubtedly occurred in the time of Snofru and they had been reflected in the adoption of a different type of pyramid (*i.e.* the true instead of the step pyramid) for the king's tomb, and in the placing of the mortuary temple on the East side of the pyramid, facing the rising sun, instead of the North, where it would have faced the circumpolar stars. Both those changes showed that the solar cult was in the ascendant at Heliopolis. Evidence of a further growth in the influence of the sun-cult under Cheops is provided by his conferment of the epithet "Son of Rē" upon his son and successor Djedefrē, the earliest recipient of the epithet now known.⁸

8. The credit for making that discovery is due to H.W. MÜLLER. See his article "Der gute Gott Rādjedef, Sohn des Rē", *ZÄS* 91, 1964, p. 129-133; A.H. GARDINER, *Egyptian Grammar*², p. 74, says that the name with the epithet "Son of Rē" was "as a rule

that borne by the king before his accession to the throne". Similarly H.G. Fischer, in reply to my letter of inquiry concerning Djedefrē (Rēdjedef), states "Both (Rēdjedef and Chephren) were so named before they became kings".

No special significance has hitherto been attached by Egyptologists to the presence in the Great Pyramid of a granite sarcophagus. It is not the earliest stone sarcophagus known, nor is it the first which can be ascribed to a king,⁹ but not one of Snofru's pyramids seems to have been provided with a stone example.¹⁰ By contrast, the tombs of all the kings of the Fourth Dynasty who reigned after Cheops were equipped with sarcophagi.¹¹ But why did Cheops choose to have a stone sarcophagus in his pyramid? Again, it was a solar cult feature which grew in importance during his reign.

According to the solar creed, the dead king was assimilated into the sun god Rē and consequently he entered the mouth of the sky goddess Nut every evening at sunset, passed through her body during the night and was re-born every morning. Pyramid Text § 1688, addressing the king, says: "You are Rē who came forth from Nut who bears Rē daily and you are born daily like Rē". § 780, referring to the process of gestation and addressing the king says: "You are active,¹² moving about in your mother's womb in her name of Nut".¹³ Other Pyramid Texts reveal that the sarcophagus could serve as a substitute for the actual body of the goddess, in her capacity as the mother of the dead king, and that concept is clearly portrayed in the following: § 616 "Nephthys has collected all your members for you... (she) has made them healthy for you, you having been given to your mother Nut in her name of 'Sarcophagus' ". A text carved on the sarcophagus of the Sixth-Dynasty Vizier Khentika Ikhekhi reads: "You shall place this lid (lit. "door") of this sarcophagus upon its mother (*mw.t=f*)".¹⁴ In this instance Nut seems to be identified with only the box of the sarcophagus.

The crucial position occupied by Nut in the royal mortuary cult is further emphasized in a text which, although it does not specifically identify Nut with the sarcophagus, affirms that the king's mortal mother has had to surrender to Nut her claim to maternal relationship with her own son. In Pyramid Text § 1428 the King says: "I do not know my first mother whom (once) I knew, it is Nut who has borne me". It cannot be without significance that the spells in the Pyramid Texts uttered by Nut or mentioning her are more numerous than those naming any other goddess. Very probably her rise in importance had been gradual and extended over many centuries, about which we have no real information.¹⁵ Her name has not been found

9. See E. BROVARSKI, "Sarcophag" in *LÄ* V, col. 472, and H. GOE, "Sechemchet", *ibid.*, col. 766 sq.

10. STADELMANN, *MDAIK* 36, 1980, p. 443 sq., suggests that in the pyramids of Snofru the burial-chambers with corbel roofs were conceived as sarcophagi.

11. Only fragments of the sarcophagi of Djedefrē and Shepseskaf have been found. See PETRIE, *op. cit.*, p. 141, and G. JÉQUIER, *Douze ans de fouilles dans la nécropole memphite*, 1924-1936, p. 20.

12. *šm jb*; R.O. FAULKNER, *Pyramid Texts*, renders "violent", which seems too strong.

13. The text has *rn.t*, "your (fem.) name".

14. C.M. FIRTH, B.G. GUNN, *Teti Pyramid Cemeteries* I, 1926, p. 98; T.G.H. JAMES, M.R. APTED, *The Mastaba of Khentika called Ikhekhi*, p. 65. See S. SCHOTT, "Nut spricht als Mutter und Sarg", *RdE* 17, 1965, p. 81, n.4.

15. An early association with Heliopolis is suggested by Pyramid Texts §§ 5 and 1664, which mention an ancient shrine of Nut named *hw.t Šnj.t* "in On".

in any of the early dynastic texts¹⁶ and it does not occur in the published texts from beneath Zoser's Step Pyramid. Neither her name nor her representation has been preserved on the fragments of a small shrine dating from the time of Zoser which Schiaparelli found in his 1903-1906 excavations at Heliopolis and which is now in the Turin Museum.¹⁷ If, as has been supposed, the scene on the fragments depicted an episode in the *heb-sed* in which the Heliopolitan Ennead participated, Nut would certainly have been included among the deities.

Once Nut, in her rôle as mother of the sun god Rē and of the dead king, had been incorporated in the royal mortuary cult, the provision of a stone sarcophagus in the tomb became a prime necessity. If that necessity had existed when Cheops came to the throne, his pyramid would surely have been planned with it in mind, but evidently that was not the case. The sloping section of the Descending Corridor is fractionally wider and higher than his sarcophagus, but the dimensions of the horizontal section are not sufficient to have permitted the passage of the sarcophagus through it.¹⁸

Two solutions were possible: the tunnel could be enlarged or the sarcophagus could be placed in a chamber which would be built in the superstructure. The second alternative was the solution which was adopted. Snofru, in his northern pyramid at Dahshur, had already chosen to locate his burial-chamber not merely in the superstructure but at a considerably higher level than its two antechambers, so that a precedent existed.¹⁹

In his exhaustive survey of the Great Pyramid, Petrie paid special attention to the sarcophagus and his observations on its workmanship seem to provide clear support for the conclusions which will be drawn in this article. He wrote: "It is not finely wrought, and cannot in this respect rival the coffer in the Second Pyramid. On the outer sides the lines of sawing may be plainly seen: horizontal on the N., a small patch horizontal on the E., vertical on the S., and nearly horizontal on the W.,... On the N. end is a place, near the W. side, where the saw was run too deep into the granite and was backed out again by the masons; but the fresh start they made was still too deep, and two inches lower they backed out a second time; having altogether cut out more than 1/10 inch deeper than they intended".²⁰ The clumsiness in sawing was matched by similar incompetence in handling drills, as Petrie goes on to show.

16. I am much indebted to Michèle GERMON RILEY for allowing me to consult her unpublished thesis, *Paléographie des signes hiéroglyphiques sous les deux premières dynasties égyptiennes* (Paris-IV Sorbonne, 1985). Neither in the texts reproduced in that thesis nor in the index to P. KAPLONY, *Die Inschriften der ägyptischen Frühzeit*, is there any mention of Nut.

17. PM IV, 61; W.S. SMITH, *A History of Sculpture and Painting in the Old Kingdom* (1946 ed.), p. 133 ff., figs. 48-53. I wish to thank Professor J.R. Baines for bringing the second reference to my notice.

18. The dimensions of the sarcophagus are: L. 2.276 m., W. 0.987 m., H. 1.051 m. The horizontal

section of the Descending Corridor measures W. 0.85 m. and H. 0.95 m.

19. See above, n. 4. Nut's rôle as a sky-goddess might seem to have been the reason for placing the burial-chamber so high in the pyramid, but the fact that Djedefrē, in his pyramid at Abu Roash, reverted to a subterranean location for his burial-chambers argues against such an explanation. Furthermore, the plan of the Unfinished Pyramid at Zawiyet al-Aryan is essentially similar to that of Djedefrē in its substructure; like the pyramid of Djedefrē, it also had an oval sarcophagus.

20. *Op. cit.*, p. 84.

The poor quality of the workmanship on Cheops's sarcophagus is in striking contrast with the mathematical perfection of the building in which it was placed and with the excellence of the not very far from contemporaneous red granite sarcophagus lying in mastaba 17 at Meidum.²¹ So marked a difference between the two sarcophagi cannot be explained by assuming that Cheops's craftsmen had lost some of the knowledge and technical skill of their predecessors. The simplest, and surely the most probable, explanation must be that the masons who made Cheops's sarcophagus were working under pressure to complete it too quickly. How could such a situation have come about?

When the plan for an underground burial-chamber was discarded, a decision had to be taken on the position which its successor was to occupy in the superstructure, a substantial part of which had already been built. Practical considerations would favour as low a situation as possible. The sarcophagus would have to be taken up a building-ramp and placed in the chamber before its roof was completed,²² but the construction of its walls and everything apart from the roof could proceed while the sarcophagus was being quarried and prepared. Work on the superstructure could not be brought to a standstill if the sarcophagus was not ready when it was wanted and there were certain risks of delay for which allowance could not be made when estimating the time of delivery. The unfinished obelisk which still lies in the quarry at Aswan demonstrates how unexpected developments could upset calculations even at an advanced stage in the fabrication of a granite monument. There were other risks too, such as shipwreck in one of the hazardous stretches of the Nile when transporting the heavy sarcophagus from Aswan to Giza. It is certainly possible to see in the imperfections of Cheops's sarcophagus evidence of an unexpected cause of delay in its delivery, perhaps even that it was a rather hastily produced substitute for a lost or discarded original. While it can be no more than conjecture, the failure to deliver the sarcophagus by the expected time could explain why work on the Queen's Chamber was brought to an end before it was absolutely finished and why the construction of another burial-chamber (the King's Chamber) higher in the superstructure became necessary.²³

21. Describing the sarcophagus, WAINWRIGHT wrote in W.M.F. PETRIE, E. MACKAY, G.A. WAINWRIGHT, *Meidum and Memphis III*, p. 16: "The workmanship is fine; the accuracy of the flatness of the interior having an average error of not more than 0.25 inch over a surface of about 6 × 2 feet, and even this variation is in large wide curves. Over the smaller area at the ends, about 2 × 2 feet, the average error drops to only 0.02 inch."

22. PETRIE, *op. cit.*, p. 216, "The coffer cannot have been put into the pyramid after the King's Chamber was finished, as it was nearly an inch wider than the beginning of the ascending passage. The only conclusion, then, is that the coffer was placed in the King's Chamber before the roof was put on".

Accordingly, in the Queen's Chamber it would have been necessary to follow the same procedure.

In the second pyramid, PETRIE notes, *op. cit.*, p. 108, "This coffer, being 42.0 inches wide, can never have been taken through the passages, as the upper passage is only 41.3 wide, and the lower is 41.2 and 41.6. Hence it must have been put in the chamber before the roofing was laid over it, and so before the pyramid was built."

23. PETRIE, *op. cit.*, p. 214-216, does not mention the uncertainty about the continuity of the so-called air-channels to the exterior of the pyramid among his reasons for considering the construction of the Queen's Chamber as unfinished. The interior apertures were unquestionably left covered with stone.

Although proof is lacking, it seems very likely that it was before the decision to locate the burial-chamber in the superstructure had been taken, and while work was still in progress on the underground chamber, that a shaft was cut through the masonry which had already been laid and through the underlying rock, to end in a recess near the bottom of the West wall of the Descending Corridor. The sole purpose of the shaft, at that stage, would have been to provide ventilation for the workmen who were going to construct the underground burial-chamber and the corridor leading to it from the antechamber at the end of the Descending Corridor.²⁴ With the abandonment of the underground plan, the need for providing ventilation ceased to exist, and the present writer believes that no upward continuation of the shaft was, at that time, intended; the mouth would have been at the same height as the pyramid when it was decided to make the change.²⁵

Before discussing the shaft further, it is necessary to mention a problem which had arisen once before from locating a burial-chamber at a higher level than the entrance to the pyramid. That problem was the blocking of an upward-sloping corridor after the funeral had taken place. It could only be done by putting the plug-blocks in a line at the top of the slope while the pyramid was being built and releasing them by removing a chock — possibly by pulling a rope from a safe distance — and allowing the train of blocks to slide down the slope by gravity. The opinion has been expressed that it was by that method that the Ascending Corridor of the Great Pyramid was blocked.²⁶ It may certainly have been the architect's first intention. Not very many years earlier, when the method was employed in the subsidiary pyramid of the Bent Pyramid at Dahshur, only partial success was achieved: two of the train of four blocks had reached their destination at the bottom of the corridor; two had remained jammed near the top.²⁷ Whether or not the same method was actually employed at the Great Pyramid it is not possible to know, but the experience at Dahshur may well have persuaded the architect that the risk of failure required the provision of an alternative arrangement which would enable workmen to supervise the passage of the blocks from behind, without their being trapped inside the pyramid.

A way of avoiding the risk was found by extending upwards the shaft, which seems originally to have been intended to provide ventilation to the subterranean constructions and on which work had been discontinued when it was decided to put

It has not yet been proved that the channels reached the outside of the pyramid; present evidence appears to point contrariwise.

24. MARAGIOGLIO, RINALDI, *op. cit.* IV, p. 186, express the opinion that the shaft was intended principally "to create a circulation of air, so allowing the free breathing of the workmen employed in cutting out the underground rooms and passages".

25. If Borchardt was right in his assertion that the lower part of the Ascending Corridor was cut through

laid masonry, the height of the pyramid when the change of plan took place may be indicated, as he believed, by the break in continuity of the masonry. See BORCHARDT, *op. cit.*, p. 2, Abb. 1.

26. MARAGIOGLIO, RINALDI, *op. cit.* IV, p. 144, who suggest that the corridor "had been lubricated probably by very liquid clay mortar".

27. See A. FAKHRY, *The Monuments of Sneferu at Dahshur I, The Bent Pyramid*, 1959, p. 90-94, figs. 55 and 56.

the burial-chamber in the superstructure. In the downward direction the shaft extends from an opening at the bottom of the West side of the Grand Gallery, partly obliquely and partly perpendicularly through the core of the pyramid and the underlying rock. The point at which the upper and the lower parts of the shaft met was possibly in one of the fissures in the rock, so that the junction would not be visible. Petrie's detailed observations quoted below ²⁸ have never been refuted, nor has his final assessment that the whole of the shaft was "an additional feature to the first plan", which does not necessarily imply that the whole of the shaft was constructed when the pyramid was in the same stage of development. It is hard to see what practical purpose it could have served while the superstructure was being built. The chambers and their ways of access were being constructed either in the open air or very close to the surface, so that there was no lack of ventilation, and the building materials, like the sarcophagus, were transported from the ground up external ramps. All the physical evidence seems to indicate that the upper part of the shaft was an afterthought, hastily executed not only as a way of escape for the workmen in charge of the blocking of the Ascending Corridor, but also as a means of access to the back of the plug-blocks if their descent by gravity failed.²⁹

In both the Great Pyramid and the subsidiary pyramid of the Bent Pyramid, the ascending corridors do not begin at the entrances to the pyramids; they are connected to them by descending corridors which run inwards. The intention behind the plan was to allow as thick a mass as possible between the outside of the pyramids and the lower ends of the ascending corridors, where the plug-blocks would end their descent. In the subsidiary pyramid, the corridor had a gradient of 32° 30' and ended in the underlying rock. Even the most violent impact by its limestone plug-blocks would not, in such a position, have any effect on the structure of the pyramid. In the Ascending Corridor of the Great Pyramid, the momentum of the descent of the foremost granite plug-block was retarded at the bottom of the corridor by a slight

28. PETRIE, *op. cit.*, p. 214, described the upper part of the well as follows: "The shaft, or 'well', leading from the N. end of the gallery down to the subterranean parts, was either not contemplated at first, or else was forgotten in the course of building; the proof of this is that it has been cut through the masonry after the courses were completed. On examining the shaft, it is found to be irregularly tortuous through the masonry, and without any arrangement of the blocks to suit it; while in more than one place a corner of a block may be seen left in the irregular curved side of the shaft, all the rest of the blocks having disappeared in cutting the shaft. This is a conclusive point, since it would never have been so built at first".

29. Both MARAGIOGLIO, RINALDI, *op. cit.* IV,

p. 136-146, and STADELMANN, *Die Grossen Pyramiden von Giza*, p. 124, discuss the purpose of the shaft, which they call the service shaft, coming to a different conclusion from the present writer. The argument adduced by MARAGIOGLIO, RINALDI, *op. cit.* IV, p. 138 and 144, that it would have been impossible to replace *from the inside* the closing block at the upper end of the shaft is probably correct, but would it have diminished security to any extent if it had not been replaced after the funeral? A mason could have broken it from inside with a few blows. Closing the lower entrance to the shaft and perhaps blocking the recess in which it was placed were far more vital. MARAGIOGLIO, RINALDI, *op. cit.* IV, p. 144, say: "It was possible to close and camouflage accurately and without any hurry the lower outlet of the service shaft".

convergence of the side-walls and a corresponding tapering of the sides of the block, so that it fitted like a wedge into a socket. For the last 5 m. — the section containing the plug-blocks— the corridor was built either of girdle-stones or of similar massive stones which would have withstood the greatest pressure to which they could have been subjected. Such elaborate precautions as were taken in the two pyramids to avoid the risk of structural damage would not have been necessary if the plugs had been controlled manually in their descent; they provide further evidence, in the case of the Great Pyramid, that the free-fall method was employed (as it must have been in the subsidiary pyramid) and, indirectly, that the well-shaft was used as a way out for the workmen.³⁰

30. In a footnote on p. 188 of his diary, dated 29th November, 1750, Robert Wood wrote of the shaft: "Its descent is contrived, like most of the wells in Alexandria, by holes in the sides for the hands and the

feet." He was prevented from descending more than about 6 m. because the shaft was "almost stuffed up with rubbish."