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Editor: Alessandra Nibbi

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OBITUARY

We announce with great regret the loss of one of our most enthusiastic contributors, Professor Mostafa El Alfi, of the University of Benha, Egypt. Our sympathy goes out to his wife and family.

Professor El Alfi left us a number of articles for publication. These will continue to appear in our journal for some time to come.

Alessandra Nibbi

TABLE OF CONTENTS

R. Bauval	The Upuaut Project: New Findings in the southern Shaft of the Queen's Chamber in Cheops Pyramid.	5
V. Dobrev	Observations sur deux statues de Menkaourê du musée de Boston.	9
M. El Alfi †	La liste des rois d'Abydos.	19
R. Krauss	März, April und Mai als durchschnittliche Monate der Getreideernte im antiken und neuzeitlichen Ägypten.	27
J. Legon	The Air-Shafts in the Great Pyramid.	35
C. Lilyquist	On (late) Middle Kingdom Style, with Reference to Hard Stone Scarabs, Inlaid Jewels and Beni Hasan.	45
A. Nibbi	Pot Bellows and Pot Stands.	59
G. van Oosterhout	Sirius, Venus and the Egyptian Calendar.	83
M. Patané	Deux points relatifs aux textes des Pyramides à la Basse Époque.	97
REVIEWS		
D. Aston	P. James et alii, <i>Centuries of Darkness</i> , Jonathan Cape, 1991.	101
A. Dodson	C. N. Reeves, ed. <i>After Tut'ankhamun: Research and Excavation in the Royal Necropolis at Thebes</i> , Kegan Paul International, London, 1991.	105
T. Du Quesne	E. Hornung, <i>The Tomb of Pharaoh Seti I</i> , Artemis Verlag, Zürich/München, 1991.	111
H. McCall	T. G. H. James, <i>Howard Carter, the Path to Tut'ankhamun</i> , Kegan Paul International, London, 1992.	117
J. Malek	F. Gomaà, R. Müller-Wollermann and W. Schenkel, <i>Mittelägypten zwischen Samalut und dem Gabal Abu Sir</i> , TAVO Reihe B, Nr. 69, Ludwig Reichert Verlag, Tübingen, 1991.	121
A. Tooley	A. H. Bomann, <i>The Private Chapel in Ancient Egypt</i> , Kegan Paul International, London 1991.	127
BOOKS RECEIVED		131

DISCUSSIONS IN EGYPTOLOGY: GUIDELINES

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(d) Each contributor will receive 25 offprints free.

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(f) Our closing dates are the last day of March, July and November. However, our numbers are now filling early so that articles are often held over until the next number.

THE UPUAUT PROJECT: NEW FINDINGS IN THE SOUTHERN SHAFT OF
THE QUEEN'S CHAMBER IN CHEOPS PYRAMID

Robert G. Bauval

BACKGROUND

On the 6th March 1993, the present writer met Rudolf Gantenbrink, the German Robotic engineer and team leader of the UPUAUT PROJECT in Cairo. This project, under the auspices of the German Archaeological Institute in Cairo, began in late 1991 and was marshalled in two stages: the first stage, to improve ventilation in the Great Pyramid using the shafts in the King's Chamber, and the second stage to explore the presumed 'abandoned' shafts in the Queen's Chamber <1>.

On the morning of the 7 March 1993, the exploration of the southern shaft of the Queen's Chamber began. This shaft, which climbs at a slope of 40° (after 2 metres of horizontal run) had been thought to only cut some 8 metres into the core of the monument. The little robot, called UPUAUT 2, carried a video camera and soon showed that the shaft was much longer, reaching some 65 metres into the core. This brought it to some 41.5 metres above the floor level of the Queen's Chamber and 21.5 metres above the floor level of the king's Chamber. At 11.05 am, on the 22 March 1993, Rudolf Gantenbrink and his team discovered a stone slab or door, later described as a sort of portcullis <2>. On the door can be seen two small copper 'handles' or 'seals'. The left one seem to have lost its bottom part which lies some 2 metres down the shaft. A little triangular opening is seen on the bottom right of the door. The video film was sent to the present writer on the 2 April 1993 and was shown to Dr. I.E.S. Edwards and Dr. J. Malek as soon as could be arranged. An official viewing was arranged for the British Museum on the 22 April 1993 by R. Gantenbrink. The video tape of the discovery was shown at 4 pm to various members of the Egyptian Antiquities Department, including Dr W.V. Davies, Dr. G. Hart, Dr. T.G.H. James, Dr. I.E.S. Edwards, Dr. C. Andrews and other members of staff.

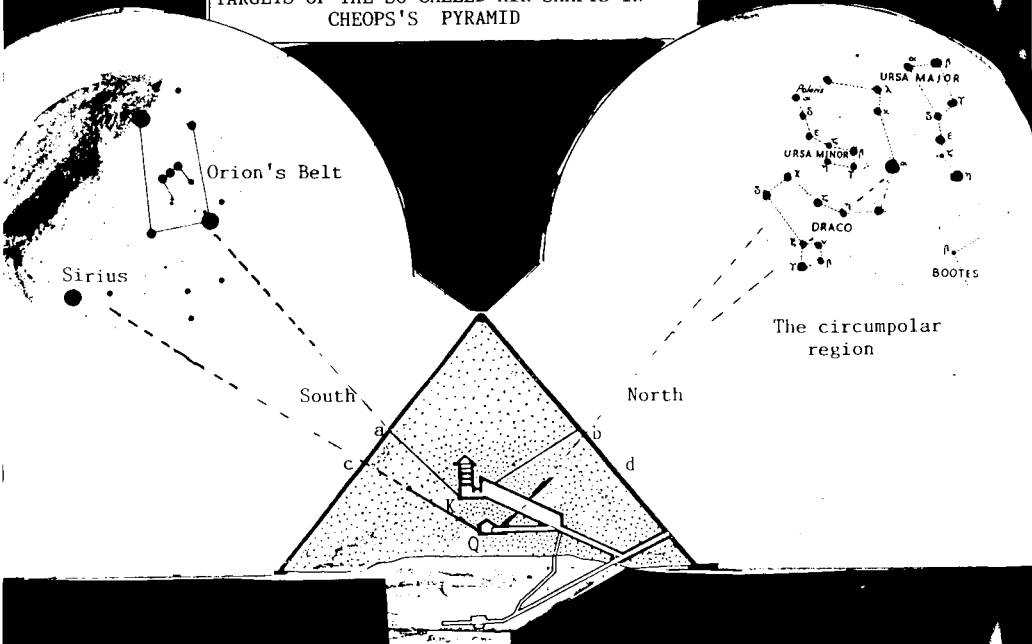
IMPLICATIONS

The finding of the 'door' at the end of the southern shaft of the Queen's Chamber has, in itself, raised a great controversy as to what may or may not be on the other side. The announcement was first made in the British press on the 7 April 1993 (Daily Telegraph, page 4) and by the 19 April it had made the front page of many newspapers around the world as well as television news, with Channel 4 being the first on the 16 April (News at 7 pm). But the question as to what may be on the other side must, for the time being, be left to rest. There are, however, immediately several implications to consider, some shaking down the rigid 'theories' and consensuses established in Egyptology. These are now reviewed below:

1) The 'Abandonment Theory' for the Queen's Chamber

It had been generally assumed that the Queen's Chamber had been abandoned by the builders in favour of another chamber, the so-called King's Chamber, higher up the monument <3>. As possible proof to this theory was the belief that the shafts emanating from the Queen's Chamber were rising only a few metres into the core, and thus unlike those of the King's Chamber which pierce

SCHMATIC DIAGRAM SHOWING THE ASTRONOMICAL
TARGETS OF THE SO-CALLED AIR-SHAFTS IN
CHEOPS'S PYRAMID



cross-section of Cheops's
pyramid

K = King's Chamber
Q = Queen's Chamber

Shaft	Target	Mythological counterpart
a $45^{\circ}00'$	Orion's Belt	Sahu-Osiris
c $4^{\circ}00'$	Sirius	Sothis-Isis
b $32^{\circ}28'$	Alpha Draconis	Rer or Tuart
d $38^{\circ}30'$	Draconis's centre	Rer or Tuart

the pyramid through to the outside. Since at least 1990, it has been the contention, however, of this present writer that the chamber was never abandoned but used as an integral part of the whole internal system for ritualistic purposes <4>. With the shaft rising at a steep angle some 65 metres from the Queen's Chamber, a rough calculation shows that the door is located some 21.5 metres ABOVE THE FLOOR LEVEL OF THE KING'S CHAMBER. This puts in question the consensus that the Queen's Chamber was 'abandoned' during the construction.

2) The Angle of slope of the Southern Shaft of the Queen's Chamber

In 1881-2, Petrie gave the angle as $38^{\circ}28'$. Rudolf Gantenbrink, using laser techniques, showed that this was much in error. The revised angle is $40^{\circ}00'00''$. Referring to an article published by the present writer in Discussions In Egyptology (DE) vol. 16 (1990), the dating of the passage of Sirius (Isis-Sothis, the Dog Star) at culmination every day must be brought forward to c. 2450 BC. This concords precisely with the new calculation made in an article published in DE 26, where revised angles of the shafts of the King's Chamber were used to date the Cheops pyramid to c.2450 BC.

NOTES:

1. Press Announcement by Mohamad Inbrahim Bakr (Chairman of the EAO) Rainer Stadelmann (Director of the German Institute) and Zaki Hawass (Director General of the Pyramid Area) of 8 June 1992.
2. See The Independent of London 16.4.93 front page and page 3. Also Daily Mail of London 17.4.1993 p.27. Also Today of London 17.4.93 p. 7. Many other papers around the world reported the story.
3. I.E.S. Edwards, The Pyramids Of Egypt, 1991 ed. p.104
4. See Discussion In Egyptology DE vol. 16 1990 "The Seeding of the Star-gods: A fertility ritual in Cheops' Pyramid ? " by R. G. Bauval.