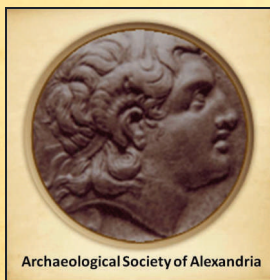


# *JOURNAL OF THE HELLENIC INSTITUTE OF EGYPTOLOGY*

**International Double–Blind Peer–Reviewed  
Egyptological and Archaeological Journal,  
jointly co–published and co–edited by  
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**ATHENS–ALEXANDRIA–CAIRO 2021**

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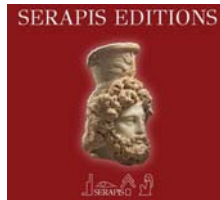
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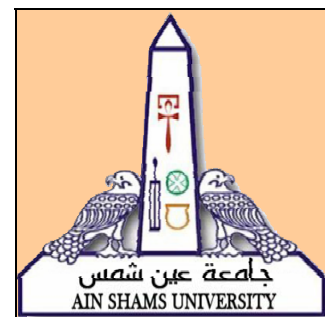
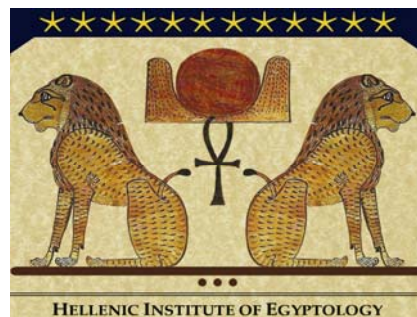
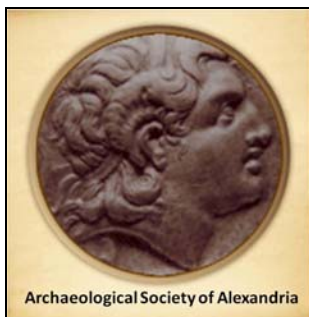
**SERAPIS EDITIONS**

ISSN 2241-0597

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	EG = Egyptology		CO = Coptology		AA = Archaeoastronomy		TH = Theology		AN = Anthropology	
	HRAPH = Helleno–Roman Archaeology/Philology & History		AT = Ancient Textiles		FOR = Forensics					
	AR = Arabic Studies		MEA = Middle Eastern Archaeology		CT = Cultural Technology		INF = Informatics			

## EDITORIAL

The *Journal of the Hellenic Institute of Egyptology (JHIE)* is jointly co-published annually, in one fascicle, by the HELLENIC INSTITUTE OF EGYPTOLOGY (Athens, Hellas), by the ARCHAEOLOGICAL SOCIETY OF ALEXANDRIA (Alexandria, Egypt) and by the UNIVERSITY OF <sup>ε</sup>AIN SHAMS (Cairo, Egypt). The aim of *JHIE*, based on the principles of Humanism and the desire for International Synergies and collaboration between colleagues of different nationalities that characterize both the Institute, the Society and the Department of Tourist Guidance of the Faculty of Arts of <sup>ε</sup>Ain Shams University, is to provide a modern scientific *forum* for the discussion of a pleiade of aspects, notions and facets from various domains of Egyptology, Archaeology and Archaeoastronomy, with emphasis on the religion, funerary texts, language and scripts, Epigraphy, Papyrology, Sciences (Astronomy, Mathematics, Botany, Chemistry, Architecture, & c.) of ancient Egypt, as well as Helleno-Roman Archaeology related to Egypt; furthermore, Coptology is also represented. Interdisciplinarity and the harmonious interference between various scholarly fields and disciplines are highly desirable, as is also a general emphasis on the collaboration of countries all over the Mediterranean Basin, encompassing studies of individual civilisations (in particular those related to ancient Egypt and Hellas), as well as common elements, contacts and interactions among them. Our journal is kindly published, handled and distributed by SERAPIS EDITIONS, Athens, Hellas. All payments are due to SERAPIS EDITIONS, and not to the Institute, neither to the Society, nor to the University.

*JHIE* is based on the highest standards and accepts, after peer-reviewing, original papers from all authors, without any discrimination between nationality, religion, gender or sexual orientation. We publish the work of international scholars, while also providing a virtual *forum* for the finest Hellenic and Egyptian scholarship; thus, we welcome original articles dealing with the aforementioned thematologies. Articles discussing different cultures will be considered for publication if they are clearly relevant to the ancient Mediterranean World (specifically to Egypt and Hellas), including ancient Hebrews, Phoenicians, Mesopotamians, Assyrians, Persians, Babylonians, Hittites, Arabs, North Africans, & c. Information about new egyptological, archaeological and archaeoastronomical discoveries and current scholarly events is also welcome (in the form of very short notes). Publishers are highly encouraged to send review copies of their books in the relevant fields (please see *infra*).

*JHIE* is a double-blind peer-reviewed journal. Articles must not have been published in, or submitted to, another publication at the time of submission and must be original. All submitted papers are firstly very carefully read by at least two Editors of *JHIE*, who will give a feedback to the author(s). Articles (excluding book reviews or research reports) are afterwards reviewed anonymously by at least two referees in their specific field, appointed by the Executive Editors. The whole peer-review process, as well as any judgment, is based on the quality of the article, its originality and the research conducted therein (only!). In cases where the reviewers recommend changes in the manuscript, authors are requested to revise their articles. In the rare case of unreasonable claims by a reviewer, the Executive Editor in Chief deserves the right to agree with the author not to accept these claims. The final approval of articles lies at the Executive Editors and at the Editorial Board. Throughout the whole peer-review process, articles are treated confidentially. In case of (alleged or suppo-

sed) interest conflict, misconduct or plagiarism of any party involved, the Executive Editor in Chief and/or (if necessary) another Member of the Editorial Board) shall pursue the case and should the situation of taking action arise, shall notify the respective party. The List of the Editorial Board can be found printed in the journal and also at its official web-site. We collaborate with more Colleagues worldwide for specific themes and issues. Finally, in order to make the double-blind peer-review process more transparent and comprehensible, we shall also publish occasionally in our web-page the names of some referees; for this, see: <https://hiegaker.wordpress.com/jhie/>. All authors whose papers have been accepted must follow carefully and precisely all our *Editorial Guidelines*, otherwise their papers will not be published! The preferred languages for publication are English and French.

The current issue of the journal is a special one dedicated to the **Athens Mummy Project**, in particular, and mummification, in general. It contains a good number of original papers on both domains (written by illustrious colleagues in these fields); as well as two brief review and introductory papers on mummification and the decomposition of human bodies (written by the Coordinator of the Project and one of the Members of our Team), these last do not claim much originality, but deemed necessary to be included. It contains also three Prologues by all involved parts: the 1<sup>st</sup> is written by the new Director of the NATIONAL ARCHAEOLOGICAL MUSEUM in Athens, Dr Anna-Vasiliki KARAPANAGIOTOU, distinguished Archaeologist and Scholar, whose presence there ignited a renaissance in the most important Hellenic Museum; the 2<sup>nd</sup> is jointly written by the Chief Financial Officer of the ATHENS MEDICAL CENTRE GROUP, M<sup>r</sup> Emmanuel MARKOPOULOS, whose friendship/common course we cherish since 2008, and by the Corporate and International Affairs Director, M<sup>r</sup> Constantine CHADJIYANNAKIS; the 3<sup>rd</sup> and most extended is written by an old and good friend as well, Em. Prof. Dr Stephanos GEROULANOS, Member of our Team, distinguished Surgeon and President of the INTERNATIONAL HIPPOCRATIC FOUNDATION, as well as eminent Historian of Medicine. We gratefully thank all of them for their inspired Prologues, sponsorship and continuous assistance. Furthermore, at this point I should also like to thank two more Members of the HELLENIC INSTITUTE OF EGYPTOLOGY, namely: M<sup>r</sup> Markos FILIANOS (distinguished Pharmacologist, owner of a modern laboratory, former Student of the Seminar, good friend and Research Partner); Dr Elsa FAVIOU, MD (distinguished Microbiologist, good friend and Research Partner). Their collaboration and partnership in various activities of the Institute is highly appreciated. Follow twelve additional original and interesting papers, related to the subjects of this fascicle, covering several facets of mummification, amulets, mummies in Museums, CT-Scanning of mummies, death and the judgment according to the ancient Egyptian religious beliefs, & c. The volume also features — at its end — six interesting reviews, presenting related prominent books. Finally, let us note at this point that due to the voluminous contents of this fascicle it was impossible to include the Chronicles' pages, which are — for the moment — withheld until one of the next issues of our journal appears in the near future. May I also note here that the sequence of papers in the current volume is not in alphabetical order (i.e.: following the family name of each author), but strictly in chronological (following the chronology of the era examined in each one of them), with a preponderance given to more general and introductory articles. The two short papers by Dr Hab. Dario PIOMBINO-MASCALI and Dr Hab. Mykola TARASENKO are both brief reports. We expect that the very next issue (*JHIE* 5: December 2022) will publish the Proceedings of the 2<sup>nd</sup> Athens

International Conference of Egyptology that was dedicated to Women in Ancient Egypt and in the Mediterranean Basin (it took place in Athens, in February 2020).

This volume has been generously sponsored by the ATHENS MEDICAL CENTRE GROUP, due to the kind funding that was offered by its Direction, namely through the generosity of its Chief Financial Officer, M<sup>r</sup> Emmanuel MARKOPOULOS, to whom I would like to reciprocate my warm thanks and gratitude once more! The continuous support and assistance of the ATHENS MEDICAL CENTRE GROUP to the **Athens Mummy Project** is to be thankfully acknowledged. The contribution of this high standards' private hospital to this endeavour is significant and it was a *sine qua non* for the successful performance of this Research Project, especially the devoted and fruitful participation of Dr Nikolaos BONTOZOGLU, MD, eminent Radiologist of international fame and illustrious scholar, whose analysis of the results, together with his Team of Radiologists, is hereby highly praised. Without his involvement and without my stamina and determination, this Project may have never been performed!

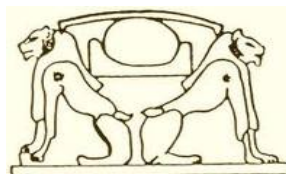
All communications, manuscripts, disks and books for review should be sent to the Executive Editor in Chief in Hellas: Dr Dr Alicia MARAVELIA (*JHIE*), c/o: SERAPIS EDITIONS: 27, Notara Str., GR-106 83, Athens, Hellas. For e-mailing, please use the following alternatives (M<sup>rs</sup> Sophia TSOURINAKI, Treasurer of the Institute): **hiieg-aker.org@otenet.gr** and also **s.tsourinaki@yahoo.com**. For matters of payment and subscriptions, please communicate ONLY with the Publisher (SERAPIS EDITIONS), as above, NOT with the Institute, the Society or the University; and in this case, for e-mailing, kindly use: **serapis.gr@gmail.com**.

We should like to thank ALL of you wholeheartedly for your contributions and for accepting to co-journey with us again in our (dual and virtual) celestial and terrestrial *iter*, this time with metaphysical and funereal observances' allusions; namely to a voyage that strives to approach mummification in ancient Egypt in a modern way, through the **Athens Mummy Project**, and through some original papers on this fascinating topic ... And we must never forget that the sophisticated funereal rites together with mummification are not to be misunderstood as a preoccupation/obsession with death or as a thanato-centric *forma mentis* of the Egyptians, but rather as unequivocally proving their immense love for life and its numerous pleasures that were meant to be continued in the hereafter with an *ennobled body* (*s<sup>c</sup>h/dt*), a body that could —in principle— endure for ever and that would be the result of embalming and preservation of the physical *body/corpse* (*h<sup>c</sup>w/h<sup>t</sup>/h<sup>3</sup>t*) after all necessary mummification procedures and rituals had been performed.

**Dr Dr Alicia MARAVELIA**

*Executive Editor in Chief*

Athens, December 2021





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# PROLOGUE BY THE DIRECTOR OF THE NATIONAL ARCHAEOLOGICAL MUSEUM



## ΕΘΝΙΚΟ ΑΡΧΑΙΟΛΟΓΙΚΟ ΜΟΥΣΕΙΟ

I would like once again to thank and praise Dr Dr Alicia MARAVELIA, President of the HELLENIC INSTITUTE OF EGYPTOLOGY and distinguished Egyptologist, for her initiative and tedious efforts to conceive and implement the **ATHENS MUMMY PROJECT**, bringing together Scientists from different fields of knowledge, such as Medical Doctors, Forensic Scientists, Egyptologists Archaeologists and Conservators, in order to present the results of their research, regarding mummification and the rituals of death in ancient Egypt, through the detailed and scholarly study of 9 out of 10 Ptolemaic mummies from Panopolis kept at the premises of the Egyptian Collection of the NATIONAL ARCHAEOLOGICAL MUSEUM of Athens.

Modern technology, such as CT-Scanning, and traditional Science (detailed documentation, collection and interpretation of archaeological data) have been harmoniously combined and I am sure they offer valuable conclusions for our knowledge of the burial process, the so-called *rites de passages*, the Palaeopathology, the societal structure and even the diet and the habits of the population that lived in ancient and Ptolemaic Egypt.

Congratulations to all Members of the Research Team! I would also like to address my warmest greetings and sincere thanks to all who were involved and supported this Research Project from the very beginning, especially to the Athens Medical Group (the CEO, Dr Vasilios G. APOSTOLOPOULOS, the CFO M<sup>r</sup> Emmanuel MARKOPOULOS and the Corporate and International Affairs Director, M<sup>r</sup> Constantine CHADJIYANNAKIS; as well as to the distinguished Radiologist and Director of the CT-Scanning Unit of that Hospital, Dr Nikolaos BONTZOGLU (MD), and his Team). I also mention Dr Georgios KAKKAVAS, because during his tenure the whole Programme started; moreover my predecessor, Dr Maria LAGOIANNI, who supported the implementation of the research; and finally the recently retired colleague M<sup>rs</sup> Eleni TOURNA, who for several years was the «soul» of the Egyptian Collection.

I trust that this scholarly edition will add to our scientific knowledge and simultaneously will be an incentive for the completion of this (until now unique in Hellas) Research Project and its complete publication.

**Dr Anna–Vasiliki KARAPANAGIOTOU**

*Archaeologist  
Director of the National Archaeological Museum  
Hellenic Ministry of Culture and Sports  
Athens, HELLAS*



## PROLOGUE BY THE CFO AND THE CORPORATE AND INTERNATIONAL AFFAIRS DIRECTOR OF THE ATHENS MEDICAL GROUP



The accomplishment of THE ATHENS MUMMY PROJECT is the capstone of fruitful collaboration between the HELLENIC INSTITUTE OF EGYPTOLOGY, the NATIONAL ARCHAEOLOGICAL MUSEUM OF ATHENS and the ATHENS MEDICAL CENTRE (which constitutes the basic sponsor for this endeavour). It is an innovative venture that took place for the first time in Hellas at the premises of our distinguished private hospital (ATHENS MEDICAL CENTRE in Marousi) and started to be materialized 6 years before through the Non-Invasive Mapping MDCT-Study of 5 out of 9 mummies of the Egyptian Collection of the Museum, under the scientific supervision of Dr N. BONTOZOGLOU, Director of the CT- and MRI-Department. The ATHENS MEDICAL CENTRE could not be absent from this enterprise, but was present to contribute effectively and profess its interest for this Research Project, contributing with its high scientific standards Staff, as well as the use of the most cutting edge technology and modern CT-Scanner and medical equipment. Today, from this position, we are here as companions to enjoy the fruits of the scientific results, the scholarly conclusions and the highly professional collaboration between the three Institutions. These results shed ample light into the Palaeopathology of the Egyptians, as well as towards understanding their society and metaphysical quests. This specific Research Project gives us the potential to denote that collaboration between two important domains of Science – Medicine and Egyptology/Archaeology – can provide excellent results for the benefit of all Humanity!

We should like to thank particularly Dr Dr Alicia MARAVELIA, President of the HELLENIC INSTITUTE OF EGYPTOLOGY, who conceived the whole Project as early as 2002 and whose restless efforts brought the ATHENS MEDICAL CENTRE in close contact with the NATIONAL ARCHAEOLOGICAL MUSEUM since 2008. We also thank very much the NATIONAL ARCHAEOLOGICAL MUSEUM, its former Directors, as well as the current Director Dr Anna-Vasiliki KARAPANAGIOTOU for the kind assistance, collaboration and contribution to the continuation of this illustrious Research Project. Last, but not least, we would like to express our gratitude and thanks to the Director of the CT- and MRI-Department of our Hospital, Dr Nikolaos BONTOZOGLOU (MD), together with his highly qualified Team of experienced Radiologists, who contributed decisively to the integration of these studies.

ATHENS MEDICAL CENTRE GROUP shall always be a helper for all Hellenic Scientists in their endeavour towards knowledge, progress and the development of our society.

**M<sup>r</sup> Emmanuel MARKOPOULOS**

*Chief Financial Officer  
Athens Medical Centre Group  
Athens, HELLAS*

**M<sup>r</sup> Constantine CHADJIYANNAKIS**

*Corporate and International Affairs Director  
Athens Medical Centre Group  
Athens, HELLAS*

## PROLOGUE BY THE PRESIDENT OF THE INTERNATIONAL HIPPOCRATIC FOUNDATION



Mummification in Egypt began during the late 4<sup>th</sup> Millennium and reached its peak around 1000 BC. The preservation of the physical form of the deceased was necessary, in order that the body could be recognized by the soul. The technique of mummification was being ameliorating over the centuries. However, all techniques had something in common. All internal organs with the exception of the heart, which was considered as the seat of emotions and of intellect, were removed through an incision, either under the left hypochondrium or through the perineum and were placed in canopic jars or returned back in the body's cavity. The brain was removed by a transthemoidal approach. It had no particular value for the Egyptians. After the removal of the brain and the viscera the cavities were filled with different materials and the body was completely dehydrated with natron. After its dehydration the body was wrapped with linen bandages. According to the wealth of the family, the mummy was then placed in an anthropoid sarcophagus that was inhumed in a tomb.

In order to reach the mummy, one had — up to the end of the 19<sup>th</sup> Century — to unwrap the surrounding linen and then to proceed to an anatomic dissection, thus acting against the deceased's wish for eternal preservation. The first non-invasive approaches to the mummies were X-Ray Examinations, of which the oldest one was carried out as early as 1896 in Vienna. However, the surrounding linen produced massive artefacts, discouraging routine investigations. The first Computed Tomography Scan of a mummy was performed in 1977 by Derek HARWOOD-NASH in Toronto. The objects were the brain of a boy and the mummy of a young woman<sup>1</sup>. This study has proven that X-Ray CT-Scanning was able to study, in a non-invasive way, mummies packed in their traditional bandages without any discouraging or catastrophic results. Shortly thereafter, CT-Scanning became the method of choice for the non-invasive visualization of mummies.

Computerized Tomography was a scientific revolution, which opened new fields for interdisciplinary collaboration, enriching exact knowledge in Egyptology, Archaeology, Palaeo-Medicine and History. Thus, the new discipline of Palaeo-Radiology has emerged. Today X-Ray Spiral Computer and Magnetic Resonance Tomography are competing, in order to give

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<sup>1</sup> See e.g.: VASILYEV, VASILYEVA, GALEEV *et al.* 2019; but mainly HARWOOD-NASH 1979: 768-773.

the best results: not only about the bone structures of the mummies, but also concerning their soft tissues and internal body cavities. With the advent of more sophisticated CT–Technology and post–processing software, 3D–reconstruction has become mandatory, not only in order to reconstruct their skeletons, but also to offer the possibility to reconstruct their physical appearance, using special computerized forensic techniques.

The goal of the **ATHENS MUMMY PROJECT**, initially conceived and started to be implemented by Dr Dr Alicia MARAVELIA, is the (non–invasive) CT–Scanning and investigation of nine Egyptian mummies kept in the National Archaeological Museum of Athens. All nine anthropoid coffins were studied by her; they date from the Ptolemaic Period and originated from Panopolis, today’s Akhmīm. These were bought by Iōannēs DĒMĒTRIOU, who donated them during the late 19<sup>th</sup> Century to the National Archaeological Museum of Athens and belong to the very important Egyptian Collection of the Museum (Director Dr Anna–Vasiliki KARAPANAGIOTOU; Curator: M<sup>rs</sup> Argyro GRIGORAKI, MA). On the 22<sup>nd</sup> of October 2016, five out of the nine mummies were packed in special boxes and transported to the CT–Scanning Unit of the Athens Medical Center (Director: Dr Nikolaos BONTOZOGLOU, MD). These were studied by an advanced technology Multi–Detector CT–Scanner (Somatom, Siemens) supported by very reliable modern software. The remaining four mummies will be scanned later, most probably after the pandemic ends.

By this non–invasive technique it was hoped to detect important palaeopathological and historical information, as this sophisticated CT technology and the special software, allow not only for exact imaging, but they also give the possibility to create three dimensional models and even help to reconstruct the physical appearance of those ancient individuals.

Indeed, as one can see from the following papers the results have exceeded our expectations! One of the five mummies was composite, but was correctly packed in the traditional linen bandages during Antiquity<sup>2</sup>. The reason is unknown. However, the scalp contained in this pseudo–mummy showed a heavy bilateral parietal atrophy. From the other four, one was a child from the age of tooth growing. The 3D virtual reconstruction is impressive: permanent teeth ready to rise, pushing the juvenile teeth out. From the mummy of a 20–30 years old man, a severe dolichoectasia of both spinal arteries was detected in the neck, together with a degeneration of the temporalmandibular joint. Further careful observation showed extensive wear in the teeth, as well as a rather unique find related to his teeth, which was already published<sup>3</sup>, that is a dental filling. The second adult mummy belongs to an approx. 20 years old male who showed a completely unexpected (and extremely rare) condition: a Silent Sinus–Syndrome, with facial asymmetry due to an atrophy of the right maxillary sinus<sup>4</sup>. Additionally, in the same mummy remnants of a faience–bead shroud were discovered. The third mummy belonged to a 25–30 years old female priestess. She was embalmed several days after her death, eventually —as Hērodotos mentions— in order to avoid any necrophilia mistreatment of her body<sup>5</sup>. The body was in advanced decomposition. Several bones were broken with no reaction of bleeding or healing, when the

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<sup>2</sup> See KALAMPOUKAS, KYRIAZI, MARAVELIA *et al.* 2020, 114–118.

<sup>3</sup> See PANTAZIS, TOURNA, MARAVELIA *et al.* 2020: 3129–3135.

<sup>4</sup> See MICHAILIDIS, KYRIAZI, MARAVELIA *et al.* 2019: 1165–1169.

<sup>5</sup> See MARAVELIA, BONTOZOGLOU, KALOGERAKOU *et al.* 2019: 141–145; 152–153, Fig. 12–15.

mummifiers tried to squeeze it into a small coffin. These are only some interesting medical findings. However, when these results are matched with the coffin inscriptions and the embalming details a huge amount of information concerning the socio-economic status of the deceased persons are coming into the surface, enriching our knowledge of the Ptolemaic (Helleno-Egyptian) Period.

The presented, mostly unexpected, rare and very interesting findings of the five mummies, examined with Computed Tomography, are the first ever published in Hellas. Due to the restless efforts of Dr Dr Alicia MARAVELIA, in close collaboration with Dr Nikolaos BONTZOGLU and his very competent Team, and with the Egyptian Collection of the National Archaeological Museum of Athens (especially with the former Curator M<sup>rs</sup> Eleni TOURNA and the Conservator M<sup>r</sup> Panagiotis LAZARIS) the **ATHENS MUMMY PROJECT** has flourished!

The mummification methods, the concomitant alterations related to the preparation of these bodies for burial, the illnesses and syndromes from which these individuals were suffering 2300 years ago, their dietary habits and their surgical interventions enable to enhance our view and knowledge about the way of living in the famous City of Panopolis, during the Ptolemaic Era, and enforce the necessity of interdisciplinary approach and studies.

## **Em. Prof. Dr Stephanos GEROULANOS, MD, FACS, FCCM**

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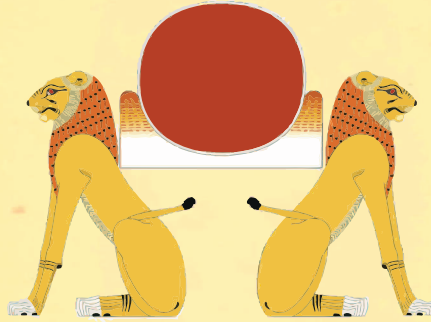
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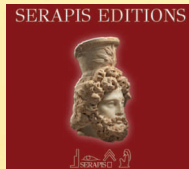
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