# EXHIBITION REQUIREMENT FOR ARCHAEOLOGICAL SCULPTURES AT EGYPT'S CAPITALS MUSEUM


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## ABSTRACT


**[AR]** **متطلبات عرض التماثيل الأثرية بمتحف عواصم مصر**

تتعدد طرق العرض المتحفي، فليس هناك قانون موحد لطرق العرض المتحفي، وإنما تخضع طريقة العرض لعدة أمور، منها ماهية المورود الأساسي من المقتنيات وطبيعتها، حيث تفرض هذه المقتنيات أسلوباً معيناً وطريقةً خاصةً بها على مصمم العرض المتحفي، ومنها المعرفة المحيطة بالمقتنيات وكذلك الأفكار والسياقات التي يفاضل بينها فريق العمل في تقديم المعروضات والموضوعات، ومنها شكل وحجم القاعات وثقافة الجمهور المستهدف. وتعتمد منهجية البحث على تسليط الضوء على طرق عرض التماثيل بمتحف عواصم مصر بالعاصمة الإدارية الجديدة، الذي يعتمد في طريقة عرضه على التسلسل الزمني للعواصم المصرية، حيث يمكن تصنيف التماثيل الأثرية قبل عرضها بالمتحف على حسب أوزانها وأحجامها إلى تماثيل صغيرة يمكن عرضها بالفاترينات كالتماثيل الخشبية، تماثيل كبيرة نسبياً كالتماثيل الحجرية بأنواعها المختلفة، وتماثيل كبيرة ضخمة لا تعرض بفاترينات المتحف، وانما يتم عرضها بالقاعات (عرض حر) على قواعد صلبة تتحمل أوزانها، كما تم استخدام شاشات عرض تفاعلية تجمع تصميماتها بين النصوص، الصور المتحركة، والتسجيلات الصوتية، وكذلك استخدام رموز الاستجابة السريعة لتعزيز تجربة الزائر، بالإضافة إلى تفسير المقتنيات للزائر باستخدام بطاقات شارحة جيدة مصنعه من مادة الألكوبوند القوية، وذلك بما يتفق مع معايير العمارة المتحفية القائمة بدورها على أربع دعائم رئيسه وهي تصميم وبناء عمارة المتحف وفق تقنية خاصة، وتأثيثها بأثاث ملائم للعرض، والحفظ الوقائي الجيد لتلك المقتنيات المعروضة بالمتحف.

**[EN]** There are many display methods. There is no unified law for the methods of display, but it is subject to several issues including the nature of the collections that impose a particular style and method on the design of the display, the shape and size of the museum's halls, and the target audiences. This research paper highlights the methods of displaying sculptures in Egypt's Capitals Museum in the Administrative Capital. The method of display relies on the chronological sequence of the Egyptian capitals. The archaeological sculptures can be classified before their display in the museum according to their weights and sizes into small sculptures such as wooden sculptures that can be displayed in showcases, large statues such as various types of stone sculptures, and enormous sculptures that are not displayed in museum showcases but are exhibited in open halls on solid bases. Interactive display panels were used, combining text, animated images, and audio recordings. The objects are explained using explanation cards made of strong alucobond material. The standards of museum architecture are based on four main pillars: designing the museum, constructing it, furnishing it with suitable display furniture, and ensuring proper preventive conservation for the exhibited objects in the museum.



**KEYWORDS:** Bases, corian, display, Egypt's Capitals, exhibition requirements, Museum, sculptures.

## I.INTRODUCTION

The American Alliance of Museums (AMM) defines museums as places for the collection, preservation, and display of human and natural heritage for education and culture. This is not realized in the museum without artistic abilities of staff and trained expertise. Hence, developing the mechanism of museums' work can be achieved by upgrading the efficient display and the museum's halls and equipment to create a narrative experience for the visitor[1]. The display is considered the cornerstone or backbone of the museum. It represents the fundamental function of a museum and demonstrates its role in achieving the concepts of accessibility and the meanings of effective communication with society. The methods and systems of internal display are one of the most important means of communication and interaction, as well as methods of teaching, learning, and interpretation tools used by the museum to convey information related to the museum's collections to visitors[2]. The main objectives of the display are to enhance the museum's message by presenting artifacts using technological means and scientific methods, as well as implementing mechanisms to achieve educational goals, increasing awareness, and educating visitors[3]. Additionally, it aims to enhance educational and pedagogical experiences and promote cultural and knowledge dissemination[4].

## II.EGYPT'S CAPITALS MUSEUM

Egypt's Capitals Museum is located in the City of Arts and Culture in the New Administrative Capital. It aims to highlight the most important Egyptian capitals from Memphis, the first capital of the ancient Egyptian era, to the New Administrative Capital by showcasing various archaeological collections from different historical times and based on the museum's role of «preserving Egypt's cultural and administrative heritage by reviving the idea of changing Egypt's capitals and emphasizing the leadership of the Egyptian state in governance and administration systems throughout historical times in a unique museum of its kind».

The museum building consists of two halls. The first hall, the Hall of the Capitals of Egypt, includes a collection of famous and important Egyptian capitals that were chosen throughout Egyptian history only for their historical, religious, and administrative importance. The exhibition shows four capitals on the right, namely Memphis, Thebes, Akhetaten (Tel Amarna), and Alexandria, and three capitals on the left, namely Fustat, Fatimid Cairo, and Khedivial Cairo. On the second level and behind the statue of King Ramses II is the New Administrative Capital, which will include artifacts representing the new era. The second hall is the Hall of Funeral Rites and the Journey of the Resurrection, where the exhibition shows the journey of death and the other world through the display of funeral rites, burial tools, other rituals of life, and the newly discovered and complete tomb of Tutu and his wife Ta-shert from the Akhmim area of Sohag.

[1] EILEAN 1994: 3.
[2] KADOUS 2012: 19.
[3] SALAMA et Al. 2020: 25-40.
[4] DEAN 1996:15.

The museum includes more than 1,000 distinctive artifacts that express the history of Egypt throughout the ages. It contains monuments and sculptures of rulers, statesmen, ministers, clerics, army commanders, and several coffins and mummies[5].

## III. Attitude of Egyptian Sculptures

Egypt is considered the greatest nation in the world in mastering the art of construction when stones where used in construction since the first dynasty[6]. The sizes of ancient Egypt's sculptures reflected the differences in the social classes at the time. The size of the Pharaohs' sculptures, which weighed up to several tons, exceeded the natural size of humans, unlike the size of the sculptures of clerks and nobles, which was in life-size. The servants and workers had the smallest sculptures, and, although their sculptures were only 50 centimeters high, they were characterized by high precision[7].

## IV. Artifacts Mounting and Bases

The manufacture of sculptures of leaders and historical figures of kings achieved high precision in the Old Kingdom. The artists used many different tools in their manufacture. These sculptures should be properly highlighted by the aesthetic effect of the body of the sculptures[8]. Therefore, it may be necessary to design a pedestal for antique sculptures, display them in the showcase, store them conveniently and correctly, or handle them or move them from one place to another. Placing a base for antique sculptures is necessary aesthetically and mechanically, during their display and/or storage. It should be highlighted that some pieces may be deformed due to the sculpture's weight. If the aesthetic form no longer plays a role, all attention shall be given to mechanical stresses. When erecting a base for storage or display, some requirements should be met, such as:

- It must have adequate resistance to withstand mechanical stresses.
- It should not pose a danger to the material of the statue or damage it, and it should avoid chemical or electrochemical reactions with the statue.
- It does not add secondary deformations like holes, cuts, or bends by fixing or incorrectly placing the statue.
- It is easy to disassemble while connecting sufficiently with the object to avoid falling[9].

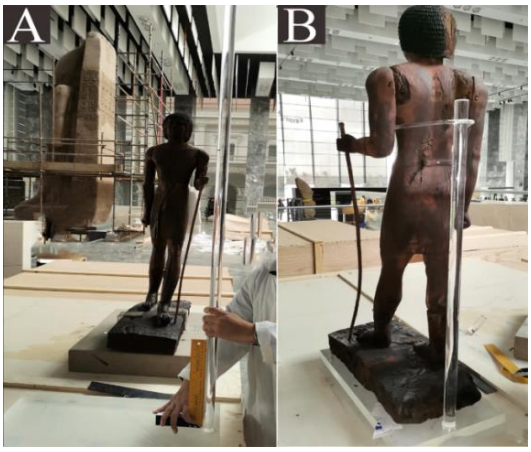
**The following are the most important bases used in the mounting of sculptures at Egypt's Capitals Museum:**

**1. Plexiglas Mounts**

Plexiglas is a methyl methacrylate polymer. Its specific density is 1.19 compared to industrial glass, and it has high transparency. It is of the same purity as crystal, with an average purity of 93 %. Plexiglas is characterized by its ability to bend and, therefore, can be shaped in its thin types (less than 3 mm). It is not affected by climate changes from -40 to 160ºC. It has high resistance to shocks, chemicals, and industrial vapors. Furthermore, it

[5] «Egypt's Capitals Museum», https://aqarfeed.com/a-museum-for-egypt-capitals/, accessed on (5/ 8/ 2023).
[6] Hassan 2019:184.
[7] Petrie 1883: 69-82.
[8] Wehba 2022: 310.
[9] Roshdy 2023: 14-15.

is non-reactive to inorganic materials and hydrocarbons[10]. No one can easily break the thicker types (more than 5 mm), so wooden or stone sculptures weighing no more than 50 kilograms can be displayed on Plexiglas mounts with a large thickness of 3: 5 cm inside the showcases, as illustrated by **[FIGURES 1-2]**.




**[FIGURE 1]: The preparation of a mount of Plexiglas used to display one of the wooden sculptures, with the work of a prop from Plexiglas to secure the sculpture ©Egypt's Capitals Museum[11]. Taken by the researcher.**

**[FIGURE 2]: The wooden sculptures displayed on a Plexiglas mount in a showcase at Egypt's Capitals Museum ©Photo taken by the researcher.**

## 2. Wooden Bases

Wood is an organic material with pores capable of absorbing and retaining moisture. It is amenable to formation by various external factors and influences. Wooden bases are used in the museum display after being covered with linen cloth[12]. They can be painted with non-glossy matt paints (Verona Polyurethane matte), which is characterized by strong adhesion, hardness, scratch resistance, and it is also moisture resistant[13], therefore they do not reflect light and match the colors of the showcase. They can also be upholstered with linen fabric for use in displaying collections. Wooden frames can be used

[10] AL MOHAMED 2015: 475-489.

[11]Photos taken inside the museum with permission from the museum administration.

[12] SCHWEINGRUBER 2013: 187-191.

[13] «Cellulose Varnish – Matte», https://www.cmbegypt.com/cmb/ar/product/cellulose-varnish, accessed on (13/11/2023).

for lightweight sculptures that do not exceed the weight of 150 kilograms after being covered with linen fabric due to its advantages over other fabrics, such as moisture absorption, ability to withstand high temperatures, and resistance to environmental factors, e.g., color change due to ultraviolet rays, as it is one of the natural fabrics[14] **[FIGURE 3].**

**[FIGURE 3]: Display of a set of lightweight figurines on wooden bases covered with linen fabric ©Photo taken by the researcher.**

Some types of solid natural wood can be used in the manufacturing of wooden bases, including:

**Oakwood:** It is distinguished by its red and white colors, and it is characterized by its high hardness. Its disadvantages include being expensive and having many pores.

**Mahogany wood:** It is characterized by its reddish color, absence of knots, and water resistance. It has a higher degree of expansion and contraction compared to other types of wood. It has a relatively long lifespan, which is why its cost is slightly higher.

**Beech:** It has a white color inclined to redness and has several types such as Roman beech, American beech, Russian beech, and Turkish beech. It has many features including high durability and strength, beautiful shape, and heavy weight. Thus, it is the best among these species[15].

## 3. Corian Bases

Corian is an artificial material similar in shape to natural marble, where it was attempted to manufacture marble and remove the disadvantages found in natural marble such as ease of breakage, expansion, contraction, discoloration, weight, and difficulty in transportation. It is characterized by gloss and smoothness of the surface and is composed of a mixture of natural materials, namely aluminum, marble powder, and chemicals such as methyl methacrylate. The natural materials give it the hardness and resistance of natural stone, and the chemicals give it ease of forming and light weight[16]. It has strength and hardness, which allows it to withstand weather. It does not absorb heat quickly. It is a

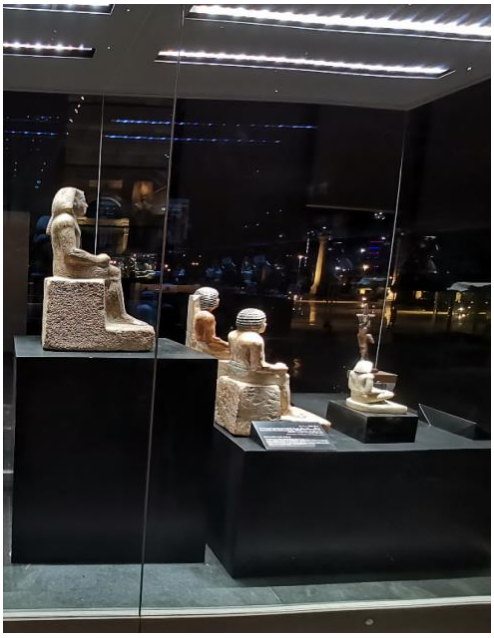
[14] ABDALLAH 2012: 73-75.

[15] WIEDENHOEFT 2010: 1-18.

[16] ABŪ SHALL 2018: 162-180.

good reflector for lighting. If any scratch occurs in this type of marble or one of its parts, it can be restored by specialists without leaving a trace in the marble. The artificial marble represents a hostile environment for fungi and insects of various kinds.

It is used to display precious artifacts, such as jewelry, due to its ability to resist ignition and fires and because aluminum hydroxide is one of the main components that enter the installation of artificial marble[17]. However, one of its main flaws is that the moisture absorption rate is minimal. It loses shine due to use. So, it is suitable for collectibles displayed inside showcases only. Small gaps appear and get bigger with time due to exposure to certain chemicals and acids. The Corian bases can be formed according to the desired height and color to display sculptures weighing from 100 to 250 kilograms[18], as illustrated by **[FIGURE 4]**.



**[FIGURE 4]: One of the stone sculptures displayed inside the showcase after being placed on a Corian pedestal ©Photo taken by the researcher.**

## 4. Marble Bases

Marble is a metamorphosed limestone rock. It is formed by recrystallizing limestone or dolomitic stone under relatively high temperatures and pressures[19]. It is strong and resistant to corrosion. It tolerates pressure, so it survives for long periods. It is easy to clean. It is a unique natural material characterized by the diversity of colors and their overlap. It can absorb moisture. Natural marble usually has a polished surface, is smooth, and can easily be polished and cleaned. It has the wonderful property of being resistant and heat-insulating[20]. Large stone sculptures, which are not displayed inside the showcases, are displayed in entrances, exhibition halls, or museum gardens. They weigh from 500kg to several tons and can be displayed on marble bases in two ways as follows[21].

[17] LIU & XU 2013: 51-58.
[18] ABŪ SHALL 2018: 162-180.
[19] BAKR 2019: 583- 635.
[20] KAMAL et Al. 2022: 135- 159.
[21] ROSHDY 2022: 114-117.

## V. Concrete Bases Clad in Natural Marble

They are solid, armed iron and cement concrete bases clad with natural marble. This method is used in the case of large, fixed stone sculptures in the sense that it is difficult to move these holdings out of place; therefore, there is no flexibility in the display because the bases with the stone pieces are attached to the museum's exhibition hall floor **[Figure 5]**.


**[Figures 5]: Displaying one of the large-sized sculptures on a concrete base clad in natural marble ©Photo taken by the researcher.**

## VI. Iron Bases Clad with Natural Marble

Steel bases can be designed and cladded with natural marble after properly insulating the steel against the effects of moisture using Kemapoxy 131 E material[22]. This method is very flexible in the display, where large stone sculptures can be moved, and their place in the display can be changed from place to place other than concrete bases installed on the floor of exhibition halls or museum gardens. These bases were used to display some stone holdings in Egypt's Capitals Museum **[Figure 6]**.

### Cement Used in Concrete Bases

Sulfate-resistant cement can be used to create concrete bases. It is a type of Portland cement where the amount of tricalcium is less than 5%, and calcium oxides, silicon, and various minerals are less than 25%, reducing the formation of sulfate salts. Reducing sulfate salts reduces the likelihood of sulfate attack on concrete[23].


**[Figure 6]: Granite stone hands after displaying on the iron pedestal after cladding with natural marble © Taken by the researcher.**

[22] «Kemapoxy 131 E », https://www.cmbegypt.com/cmb/en/product/kemapoxy-131-e/, accessed on (19/11/2023).

[23] Abū Elkasem 2018: 144-146

**The Identification Cards at the Museum of Egypt's Capitals**

The identification cards are important elements in an exhibition as they serve as a companion to the visitor inside the museum halls due to their role in explaining the artifacts and the artistic elements the artifacts contain. The identification card mainly consists of the title of the artifact, its description, date, place of discovery, and its material . They are an effective and important means for the museum's message to succeed[24]. The identification card in the museum should be made of durable materials that are not easily damaged. Many materials are used in making explanatory cards, including cardboard, banners, and white vinyl. However, the researcher prefers to use alucobond cards, which consist of two layers of aluminum with a sturdy plastic insulating material in between. The thickness of the alucobond is 4 mm. It is distinguished by durability and resistance to weather conditions. It does not rust as it is made of aluminum. Moreover, it is environmentally friendly as it does not release toxic CFC substances that contribute to ozone depletion. It can withstand high temperatures, as alucobond composite aluminum sheets can withstand extremely high or low climatic temperatures. It can resist temperatures between -50 and +80 °C[25]. It has an attractive appearance, which is needed for the display. The alucobond sheets are cut to the appropriate size for the identification card and contain information about the artifact; then, they are printed with a printing machine (UV MKII Series) on the surface **[FIGURE 7].**


**[FIGURE 7]: The identification alucobond cards used to identify the museum's artifacts © Taken by the researcher.**

## VII.CONCLUSION

Considering the weights of objects for mounting in the display is an essential task. Thus, small sculptures weighing no more than 50 kg can be displayed on bases made of Plexiglas with a large thickness of 3: 5 cm inside showcases. It is also possible to display antique sculptures weighing no more than 100 kg on wooden bases after being covered with linen fabric, which has advantages over other fabrics. Stone sculptures weighing 100: 250 kg can be displayed on display bases made of artificial marble (Corian) material. Large stone sculptures exceeding 250kg are displayed on stiffer bases to withstand high pressure and weight and are implemented in two ways as follows:

[24] NAWAWI 2010: 200

[25] AFIFY& KAMEL 2023: 492- 519.

The first method is to design solid concrete bases composed of reinforcing steel and cement, which is clad in natural marble. This method is used in the case of large, immoveable stone sculptures; therefore, there is no flexibility in the display scenario. The second method, which experimental studies have proven to be preferable because of its flexibility in displaying, is designing steel foundations and cladding them with natural marble. This method is characterized by great flexibility in the display, as large stone statues can be moved and relocated from one place to another in the display. In addition, it is possible to rotate between the exhibited items and those in storage that are similar in size and weight. The identification cards made of alucobond material, known for its durability and ability to withstand temperatures ranging from -50 to +80 ºC, are used. Alucobond is environmentally friendly and does not release toxic substances such as chlorofluorocarbon, which depletes the ozone layer.

## VIII. Recommendations

The researcher recommends using some other modern techniques in the museum Instead of identification cards to increase interaction with visitors, such as augmented reality technology, which projects virtual objects and information into the real museum environment to provide additional information to the visitor. Additionally, hologram technology, especially for artifacts that are undergoing restoration or are being transferred to an external exhibition, can be used to replace these artifacts until they return to their displays. This was successfully implemented in the restoration of the Tutankhamun mask at the Egyptian Museum in Tahrir Square. It was an amazing experience for museum visitors as they saw the mask of King Tut speaking about his archaeological artifacts and history, which greatly impressed them.

**BIBLIOGRAPHY**

**ABDALLAH**, I.: «Treatment and Maintenance of Wooden Masterpieces Art and Decorative Architectural Elements»,1st ed., Alexandria (al-Wafa Printing and Publishing House) 2012.

**ABŪ ELKASEM, Y**.: «Dirāsat ta'ākul al-ḫarasāna wa fūlāḏ al-taslīḥ al-nātiğ min amlāḥ al-kabrītāt wa'l-klūrīdāt waʾaṯarahi ʿalā muqāwamit ḍaġṭ al-ḫarsāna fī minṭaqat Ṣibbrāta: Šamāl Ġarb Lībya», *PhD Thes*is, College of Engineering Sciences/ Omdurman University, 2018.

**ABŪ SHALL**, B.: «Corian between Flexibility and thought in Interior Spaces», *Journal of Architecture Arts and Humanities* 10/1, 2018, 162-180.

**AFIFY, N. & KAMEL, W.**: «Interactive and Smart Facades Technology and its Environmental Impact», *Journal of Architecture Arts and Humanities* 8/37, 2023, 492-519.

**AL MOHAMED**, M. et Al.: «Taṣmīm waʾiḫtibār ḫalīya šamsīya kahrūkīmīyāʾīya raḫīṣa waʿālīyat al-kafāʾa», *Tishreen University Journal for Research and Scientific Studies* 37/4, 2015, 475-489.

**ALBEZRA**, M. & **NAGY**, H.: «Rumūz al-ʾist iğāba al-sarīʿa kamaṣdar li ʾistidāmat taqdīr al-fan fī al-matāḥif (Matḥaf al-Ḫazaf al-ʾIslāmī kanamūḏağ» *Journal of Social Sciences-Arab Democratic Center Germany – Berlin* 1/12, 2020, 218- 248.

**BAKR**, O.: «al-Rūḫām fī bilād al-Maġrib wa'l-Andalus», *Journal of Humanities, al-Azhar University* 24, 2019, 583-635

**CYRIL**, A.: *Middle Kingdom Art in Ancient Egypt: 2300-1590 BC*, London (A. Tiranti) 1950.

«Cellulose varnish–matte»; https://www.cmbegypt.com/cmb/ar/product/cellulose-varnish, accessed on (13/11/2023).

**DEAN**, D.: *Museum Exhibition: Theory and Practice*, London & New York (Routledge) 1996.

**DEROSH**, K.: *Women in the time of the Pharaohs*, translated by HALIM TOSUN, Cairo (Dār al-Fikr li'l-našar) 2000.

«Egypt's Capitals Museum», https://aqarfeed.com/a-museum-for-egypt-capitals/, accessed on (05/08/2023).

«Egypt's Capitals Museum», ahttps://aqarfeed.com/a-museum-for-egypt-capitals/, accessed on (5/8/2023).

**EILEAN, H.:** *Museums and their Visitors*, London (Routledge) 1994.

**ELSAYED**, Z. et Al.: «Analytic Study for Interactive Museum Display Panels of Science and Technology Museum in Islam at Saudi Arabia», *Journal of Architecture Arts and Humanities* 1/1, 2016, 163-177.

**HASSAN**, S.: *Miṣr al-Qadīma... al-Ḥaḍāra wa'l-ṯaqāfa fī al-dawla al-qadīma waʿaṣr Barnas*os, Cairo (Dār al-kutb al-miṣrīya) 2019.

**KADOUS**, E.: *ʿIlm al-Matāḥif = Museology*, Alexandria (Maṭbaʿit Ğāmiʿat Alexandria) 2012.

«Kemapoxy 131 E»; https://www.cmbegypt.com/cmb/en/product/kemapoxy-131-e/,accessed on (19/11/2023).

**LIU, S., & XU, J.:** «Study on Dynamic Characteristics of Marble under Impact Loading and High Temperature», *International Journal of Rock Mechanics and Mining Sciences* 62, 2013, 51-58.

**MAROUF**, M.: «Qiyās al-krūmātūġrāfīyā liṣabaġāt al-qumāš al-kitānī al-ḫalfī al-mustaḫdama fī tarmīm al-aqmiša al-aṯarīya», *Journal of the Faculty of Arts/ Sohag University 27, 2004,* 78-108.

**MAZUZ, S.** & **SABRINA, N.:** «al-Aṯār al-ḫašabīya wa ṭarīqat ʿilāğihā bitaqnīyat al-nānūtiknulūğī», *Arab Journal of Tourism, Hospitality and Antiquities* 1, 2020, 131-148.

«Matḥaf ʿawāṣim Miṣr akṯar min 1000 qiṭʿa aṯarīya tuʿabir ʿan tārīḫ Miṣr»; https://aqarfeed.com/a-museum-for-egypt-capitals/, accessed on (05/08/2023).

**NAWAWI, I.:** = *ʿIlm al-Matāḥif*, 1st ed., Cairo (Printing Press of the Supreme Council of Antiquities) 2010.

**PETRIE, W.:** «On the Mechanical Methods of the Ancient Egyptians», *The Journal of the Anthropological Institute of Great Britain and Ireland* 13,1884, 88-109.

**ROSHDY**, A.: Muqadima fī ʾidārit al-mağmuʿāt al-matḥafīya, 1st ed., Alexandria (al-Wafā Printing and Publishing House) 2023, 14-15.

**ROSHDY**, A.: Dirāsat taʾṯīr alʿarḍ ġair al-mulāʾim ʿalā al-ʾaṯār al-ḫağarīya waṣīyānatihā taṭbīqan ʿalā namāḏiğ muḫtāra bi al-Qanṭara Šarq», *PhD Thesis*, Faculty of Archaeology/ Fayoum University, 2022.

**SALAMA,** H. et Al.: «al-Ḥāla al-mafqūda fī al-ʿarḍ al-matḥafī wamāhīyatīhā. Dirāsa ḥāla taṭbīqan ʿalā matḥaf Kūm ʾŪšīm», *Journal of Archaeology & Tourism*, 2020, 25-40.

**SCHWEINGRUBER,** F.H. & **BÜNTGEN,** U. : «What is 'Wood'–An Anatomical re Definition», *Dendrochronologia* 31/3, 2013, 187-191.

**WEHBA**, M.: «The Embodiment of the Symbols of Leaders and Historical Figures between their Origin and Development in the Past», *Journal of the Faculty of Education, Assiut University* 38/2, 2022, 310.

**WIEDENHOEFT**, A.: *Wood Handbook: Wood as an Engineering Materia, General Technical Report FPL-GTR-190.* Madison & Wisconsin (Department of Agriculture, Forest Products Laboratory) 2010.