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## **The Steelyard in Manuscripts and Museums and Its Importance in the Civilizing Structure of Islamic Society**

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## The Steelyard in Manuscripts and Museums and Its Importance in the Civilizing Structure of Islamic Society

### Abstract:

This study deals with the museums in manuscripts and museums and their importance in the civilized construction of the Islamic society, by studying the descriptive scales, whether in museums or contained in the images, the descriptive study addressed the definition of museums in language and terminology, and then a description of the museums of study both preserved In the Geire Anderson Museum, then exposure to the descriptions of the museums in the manuscripts and how they match edited reality, the analytical study dealt with an explanation of the mechanism of work of the balance and mathematical processes that achieve a constant weight that is not to be challenged, and then a presentation to show the type of weights used of ounces and pounds And the quintal.

**Keywords:** steelyard, manuscripts, museums, islamic society.

### الموازين في المخطوطات والمتاحف وأهميتها في البناء الحضاري للمجتمع الإسلامي

### المستخلص:

تتناول هذه الدراسة الموازين في المخطوطات والمتاحف وأهميتها في البناء الحضاري للمجتمع الإسلامي، وذلك بالدراسة الوصفية للموازين سواء الموجودة في المتاحف أو الواردة في تصاوير المخطوطات، فعالجت الدراسة الوصفية تعريف الميزان في اللغة والاصطلاح، ثم وصف لموازين الدراسة سواء المحفوظة في متحف جاير أندرسون، ثم التعرض لأوصاف الميزان في المخطوطات ومدى مطابقتها للواقع، أما الدراسة التحليلية فتناولت شرح لآلية عمل الميزان والعلميات الحسابية التي تحقق وزناً ثابتاً لا يقبل الطعن فيه، ثم عرض لبيان نوع الأوزان المستخدمة من الأوقية والرطل والقنطار.

**الكلمات المفتاحية:** الموازين، المخطوطات، المتاحف، المجتمع الإسلامي.



## The Steelyard in Manuscripts and Museums and Its Importance in the Civilizing Structure of Islamic Society

Scales are considered an important method in the commercial processes among people because they are the way which is used in buying and selling. And on this basis the scales were known in the ancient <sup>(1)</sup> civilizations and they were used among people in the Islamic era in which the Holly Quran refers to the scales and measurements. This shows the importance of this instrument in sows the importance of this instrument in making tar dealings. We see in the Quran verses the importance of correct weighing And this is referred in the Quran with the word scales grain, methqal dirham, dinar, jot, straight<sup>(2)</sup> alkstas) balance, quintals, measurements etc. the phrases in Quran which are about weighing come in straight way and this shows Allah's ability to judge the people whatever their small deeds<sup>(3)</sup>. Other phrases come with statements which show fair and justice in the scales about this instrument which is used in the buying and selling through previous verses we find that Allah created the universe with accurate scales and just recognition.

We find the scales the fair instrument of Allah and Allah created everything accurately through fairness, justice and night. Allah created the scales and inspired us to make and use them to evaluate the relationships and dealings among people and evaluate all life matters Islam is careful about the dealing between people and the unity of society and appreciated so Allah ordered us to have accurate scales so we should make this instrument, we got a collection of this instrument, from many societies which were kept Anderson museum and the

<sup>1</sup> The tools of measuring were not known before as scales, bushels and measuring tools. they were known after the forming of societies in the political and economical shape the Kurdish (ahmed el heji) the legal amounts (bushels and scales) and everything that is related to the legal laws and its equivalent in the current amounts, the magazine of law and Islamic stadia, year 16, Kuwait, 1986, page8.

<sup>2</sup> Alkstas (balance) is an Arabic or roman word form eel from two words (Kst) which means justice and (Tas) which means the balance of scales. The whole word means the big scale which has a tongue which is called steelyard the scales are used to call the smatl one look. Hagag ahmed: Islamic scales since the first century of hegira until the fourth century an artificial study through the collection of the Islamic art museum and Anderson museum in Cairo, M.A study. Faculty of Arts in Qena 2006

<sup>3</sup> The ancient Egyptian civilization knew the scales which played an important rule in the economic and religious life the evidence is shown as the ancient Egyptian artist depicted on the walls of temples through paintings expressing buying and selling, Mohamed Salah bushels and scales in Ancient Egypt unpublished master thesis, the faculty of monuments, Cairo university 1980 page 176



house of kretelia in Cairo<sup>(1)</sup> and Coptic museum. The group is divided into the stable scales with on balance<sup>(2)</sup> and the second type which is known as chain<sup>(3)</sup> hand scales and the third type which is called steelyard scales which is divided into two kinds which are called the Roman steel yare and Coptic steelyard<sup>(4)</sup>

The stable scales with one balance chart one is made from a metal base which is moved by two metal wheel and a metal pole is fixed on it vertically ended with copper balance the other and has ahead a neck which is dulcimer with the value of the product and when the balance becomes equivalent with the balance. The second scale which has to balances which the seller carries with his hands is from three copper chains. Each scale has a metal pole and in the middle there is cursor and above is the hook which is used for hanging the balance qabbani scales has several models in Anderson museum ad one model in the Coptic museum All of them have one formation which is the metal pole or pillar made from steel which have many shapes as square rectangle and triangle and this pole ended with ahead which has many forms as ornament circle which has in the middle of it a star dish or dome or turban before the end of the opposite side theirs a part which makes the mechanical movement scales which is a hole in a metal pole body connected with a metal nail thinner than the hole and above it curser and two tongues and on the back there is a necks which is the second part of the scales and the scales and the hook is fixed on it and under it a group of chains which have books to hang the products which are wanted to be weighed A copper ball moves on the metal pole with weighing markets which point to the correct weight of the product properly (chart vi , 12, 19) all these scales were made from steel and copper Many crafts men specialized in making

<sup>1</sup> Mohamed jelmam Eljazar built it in 1631. Wealthy families lived in that house. A lady from Crete Island lived in that house , so it was called Crete house this house lies in the east of Ibn Toulon mosque it was one of two house which were built in the Ottomans age the other house is known as the house of Anna salem the two house are connected with one path. The house were called Anderson museum because the Egyptian government allowed the offices Anderson to stay in it in Cairo During his stay he could collect various collection of furniture and carpet etc lte stayed in Cairo from 1907 to 1924 he heel much time to have his collection in 1942 he had to leave Egypt because of his illness the Egyptian government allowed the public to see his collection in 1943 the government made the house a museum look caroline 7-56 (Auc, 1999) A practical Guide, Islamic Monuments in Cairo 46-47.

<sup>2</sup> From the collection of Anderson museum

<sup>3</sup> From the collection of Anderson museum 37

<sup>4</sup> The Coptic museum in Cairo has a model of this type



the scales such as those who work with copper, black smiths, calligraphers and decorators who decorate the scales with leaves and heads of birds in addition to writing elements. This study will give us many information included in manuscripts as many institutions kept the manuscripts in Egypt and western and Arab world that give us information about the making of scales specially Qabbani scales and it's components and the uses of these parts in making proper measurements. The manuscript of sheikh Abu Elfath Mohammed ahmed Muhammad El sufy which has nineteen pages size (18 19 cm) which he in titled message in the industry of qabban 950/154<sup>(1)</sup> the Egyptian book house has an article of Elya El matran in bushed and scales which was owned by mummied khalfa koklian<sup>(2)</sup> and then owned by Hussein bash Gawish<sup>(3)</sup> 1781 <sup>(4)</sup> the Egyptian book house has another manuscripts which is written by khedr Abdu Elrahman Elberelys el Qabbani which has twenty four pages size (10x15 cm) in 1855 and he called it "the beautiful jewels and the sun of time age in

steelyard<sup>(5)</sup> science there is another manuscript which has many messages and articles in 38 pages which was written by sheikh Abdulmegeed El samoly and another article by baeshi the Umayyad and Andalusia <sup>(6)</sup>All these manuscripts give us many important information about the cultural building of Islamic society through the making of this instrument which played a vital role in the religious and economical of this society. We have a study of the scales with the two balance and its weights but we will show the types of scales and the decorations and texts in the manuscripts.

<sup>1</sup> Recorded in the Egyptian Book House No. 338.

<sup>2</sup> A name of a military group in the ottoman age which means horse riders and their mission was to maintain security in the country look Abdel kareem Rafek, sham and Egypt in the ottoman era to Napoleon Bonaparte, Damascus, 1968 page 144

<sup>3</sup> Jaweesh is the official who has the orders and commands from the Basha. He was the head of Ashraf people look Ahmed El saeed sulaiman, Egyptian knowledge House 1979 page 64

<sup>4</sup> Recorded in Egyptian book shop no 92

<sup>5</sup> Recorded in Egyptian book shop no 32

<sup>6</sup> Recorded in Egyptian book shop no 87



## Description of balance steelyard in manuscript

Scales are considered a light from the teachings of Islam which Allah prescribed upon the worshipers to make justice and know the difference between good and evil scales have been given seven names in Arabic qaban, kafan, meezan, Karston mostakeem, keastas and Ameen.

They were made from steel<sup>(1)</sup> formed through a definite shape by the blacksmiths the craftsmen bring the steel and shape it Apiece of steel or copper<sup>(2)</sup> was shaped to a straight pole it can be rectangular square or triangular (3,7,9,10) it is called kasaba<sup>(3)</sup> this pole reaches one feet or three feet <sup>(4)</sup> according to the weight and then the marks were put Ander anathematic rule which depends on the length of the pole and the weight place from its two centers or ends which the manuscript called and the beginning was marked in the end of the pole and above it the tongue was fixed in the pole through a hole fixed by a square nail penetrate a hole called Bakhsh<sup>(5)</sup> there is a place of the tongue ending with a hook to hang connected with rings which are called safafeer<sup>(6)</sup> under the hook there is a triangular head called El shaheed<sup>(7)</sup> next to the edges of the tongue which measure the right weight of the product It is called kantara and they write down on it some phrases which proves the right weight people like the beauty of kantara which has a nail and a correct report<sup>(8)</sup>

we did not find these writing in the models of saved scales in both museums but then must be other models written on them these writing as these which refer to the qaban scales and were written on the short arm as the manuscript refers, while some writing were clone on the copper ball which mores on the pole to tell the weight of products.

<sup>1</sup> Khedr El Brelesi, the beautiful jewels, and the sun of time eye in the science of steelyard pages 3.

<sup>2</sup> Frayler (j) A large scale Enterprise historical musings from salem Maritime NHS, IV, No, 1 may 2003, p4

<sup>3</sup> The same book p4

<sup>4</sup> Frailer (j) Ibid p4

<sup>5</sup> Frailer (j) Ibid p4

<sup>6</sup> Frailer (j) Ibid p4

<sup>7</sup> Frailer (j) Ibid p4

<sup>8</sup> Frailer (j) Ibid p4



The other form is behind the second house of the tongue by four fingers <sup>(1)</sup>. It was placed under the short arm which represents the second part in the straight pole which is called the head or neck <sup>(2)</sup> which is thicker than the pole and different from it <sup>(3)</sup> this part was rectangular meets with the pole which was decorated with crossing lines inside the rectangles and was fixed with a nail and ends with another hook to hang the products. The two parts were connected directly. The short arm (head – neck) decorated with plant elements as a twisted branch in the style of Barok and Rocoko<sup>(4)</sup>. The short arm in Anderson Museum (4 – 5 – 6) is decorated with twisted branches and comes out of it the cypress <sup>(5)</sup> tree in Rakoko style.

It was well made that we think that the Scales must come from turkey the other side comes with a text which refers to that an addition was made later as we find a let written in the style of carving by Othman hassaneen El kalargi 1793 we also find plant formation we find a big difference between the faces of the arm so it might be made in turkey in the 18<sup>th</sup> century but the other writings made in Egypt in the same century. The writings refer to the person who is responsible for watching the weight processes by the scales as wheat. Rice. Sugar and oils. The scales were used to weigh the food products and defines its value and price in the market <sup>(6)</sup> the decorations on the short arm came against the manuscripts which say i am the scales which make no mistakes <sup>(7)</sup> and support the right under the teachings of Allah.

The writings on the copper weight which moves on the metal bar to define the right way of the product. The head or the neck ends with an arrow shape

<sup>1</sup> frailer (j) Ibid p4

<sup>2</sup> frailer (j) Ibid p4

<sup>3</sup> Hocker (f) wheight money and wheight money the scales and wheight from serce limani, the ina quarterly volum,20,N 4 p.p 13 – 14

<sup>4</sup> Rococo: it means in French the shell or the sea shell has irregular shape and twisted lines the trappings have been taken from it and is considered as an interior decoration this style appears in the 18<sup>th</sup> century and is extension of the baroque style look Mohamed Abdel Aziz Marzouk, Islamic decoration arts the ottoman era cairo 1987 Abdalla Atya, Islamic monuments and arts cairo 2005 p 211 – 134

<sup>5</sup> cypress tree is ever green all the year and has pyramidal shape reaches 30m and has small leaves as scales in turkey it was used on their artistic products as earthenware, textile, carpets and other metals etc. see Arsevan celal Esad les arts decoratifs Turks Istanbul p 60 .

<sup>6</sup> Ahmed El sherbeni,, the history of Egyptian trade in the free economic age 1840-1914 the Egyptians history, 86 the general Egyptian institution of books 1995 p 94

<sup>7</sup> I bid , p4



decorate in circles shape inside it there is wheel surrounded with smaller circles mating a star <sup>(1)</sup> dish By carving and emptying other craftsmen participate in making the sales and make a lot of decoration which show the skills and artistic abilities and show great knowledge with geometry rules the metal bar in the Coptic scales comes with triangular shapes Coptic there are marks which show the weight signs<sup>(2)</sup> there are no decorations on the short arm there are two other kinds of scales number 41 in Anderson museum which have a metal bar connected with a hanging hook behind it there is a short arm to carry the items there are two centers to carry the products or the first center ends with a divert hook and the other center ends with chain to weigh other items different from the first center which has the second house of the tongue and ends with a circle head The third part is called the tools and represent the chains and hooks which carry items made from steel connected with each other and ends with hooks to hang items it starts with a metal ring and ends with a heed called tailasan) and ends with two rings called shoulders which have four chains ending with a plate the manuscript called these forms the scorpion and says I am the stinging scorpion <sup>(3)</sup> hart the envious person my poison harts the bad ones and my star is like mars and my face illuminate the light <sup>(4)</sup> the manuscript gives us what the models lose by the time which show the strict measures made by the scales to ensure proper weighing.

The fourth part and the last one is the ballor pear which wins on the metal bar to weigh items it is called (sanja shelendana it was made from a copper body full with lead ends with ahead and ring connected with the blade which moves on the bar there are writing on the blade as I am the blade which carry out proper

<sup>1</sup> the star dish is formed from cogwheel almond kinda the kinds has a hexa shape the cogwheel is in the Centre the number of almonds and kindas is the same as the number of gear teeth 30 the khedive Ismael age witnessed the first attempt to put the decimal system in scales and bushels as it was used in many countries which has a trade relations with Egypt moreover there were many foreigners who worked in the trade the Egyptian climate wasn't ready to accept this system it was only used directly in the English occupation in 1882 see Ahmed El sherbenis the history of Egyptian trade in the free economic era p 95.

<sup>2</sup> I bid p5

<sup>3</sup> I bid p5

<sup>4</sup> I bid p5





weighing <sup>(1)</sup> we have many forms of the ball as pear and as cylinder. There is pear hellendanh made from copper in Anderson museum number 43 ended with a metallic connected with the blade without any decoration or writing (chart 11) there is another one made of steel

In the Coptic Museum in Cairo there is one in Anderson Museum which is in a cylindrical form and made into three parts the biggest part and the middle part have decorations and writing but were erased. The pommel ends with sharp top and is closed in the tab which is connected with a hook attached with the blade. The bar ends with a twisted top as a necklace shape and mover on the bar

In addition to these weights which has no decoration we found a copper pommel in Anderson Museum (12 – 13 ) which has plant trappings on a spiral form but looks dull. But we find beautiful trappings in other types one of these models is in Anderson Museum in Cairo made of copper number 40 and has trappings and writing the writing on the pommel says I am the scales which tells the truth. We find the letters written as bird shapes and some letters has an open mouth and written in the Kofi style of writing in style of Seljuk we find many Seljuk antiquities <sup>(2)</sup> in the sixth and seven the century

There are similar models that show that the pommel is not from Othman era but they are from mamloki era in which the metals are affected with ornamental patterns in the Seljuk era but the difference is that the pommel that <sup>(3)</sup> not use carving style as done in the Seljuk era

In addition to that there is another pommel kept in Anderson museum made of copper and has twisted plant branches in an abstract way and carved to fill the outside pommel except four circles which has the same previous phrases putting half of the line in each circle we find a phrase I'm the scales which make no mistakes) in one circle and another phrase (I only say the right) in another circle and a phrase ( I do what Allah ordered) and a phrase do correct weight ) in the fourth circle chart 14

33 Argin (soy ulker) the evolution in the art of Islamic minerals from the beginning to the and Seljuk age, translated and presented by El sefsafi ahmed katory the high council of culture the national project of translation, 973

<sup>2</sup> Argin (soy ulcer) the evolution in the art of Islamic minerals from the beginning to te and Seljuk age, translated and presented by El sefsafi ahmed katory the high counsil of culture the national project of translation, 973

<sup>3</sup> Mohamed El Geheni historical study of a metal structure in bumiller collection in Germany magazine of monument faculty south valley university second edition, 2007



But These writings and decorations were not well made and there are mistakes in some words as omitting some letters and we find the work was done quickly in a new style of writing in 1863 after Momtaz Bek made the rules of this style so the pommel must be made before 1280 by Egyptian craftsmen in 19<sup>th</sup> century

The mechanism of steelyard scales the work starts on the steelyard after preparing the pole with mathematical calculations which make the weighing correct.

The pole is made of iron or copper and it takes cylindrical shape which has four equal dimension in length and width standing on square angles and the upper and down angles are acute and the other angles are obtuse or the pole maybe in pistol<sup>(1)</sup> shape and the upper and down angles are square or acute.

The marks must be in equal distances that is in the larger part in the scales but the other is on the opposite direction and includes the two tongues <sup>(2)</sup> the mechanism of the scales is done on the lifting law which depends on (milled force x long arm = strong farce x short arm)<sup>(3)</sup> the miled force is the plate of scales hanging on the pole of the scales which is the long arm.

The strong force is the product which is put on the neck of the scales or its head which is the short arm this process is made in the next role two weights paralleled on a flat space and have balanced ends each percentage of each weight is as far as the other<sup>(4)</sup>. If the hanging pommel weighs fire and the distance from Its center is ten the result is fifty.<sup>(5)</sup> the weight of the pommel is measured by the distance between the pole center and the place of hanging the ounce we must know the type of used weights which are ounce. Pound and quintals. The ounce <sup>(6)</sup> is a snagh which weighs seven weights and weighs 40 dirhams <sup>(7)</sup> it was very famous as the prophetic hadith mentions that Abo salama Abdu Rahman said I

<sup>1</sup> Abo El fath El sofi (Mohamed Ahmed) message in the steelyard science manuscript in the Egyptian Book house no 338

<sup>2</sup> Hassan Ibrahim El Geberty El Henfy the precious necklace involving scales congress library 162/5 p3

<sup>3</sup> Galal shawky : science and knowledge of geometry in Islamic civilization Kuwait intuition of scientific progress, 1995

<sup>4</sup> Hassan El Gabrty, Ibid p2

<sup>5</sup> Hassan El Gabrty, Ibid p2

<sup>6</sup> El Antry weights and bushels, manuscript in the Egyptian book hours no 339 p4

<sup>7</sup> Ibn Manzour the Arab tongue part 1 p 194 .



asked Aisha may Allah be pleased with her how much was the dowry to his wives <sup>(1)</sup> she said it was twelve ounces and a half.

The weight of the ounce made of silver in Mecca which was 40 dirham and the prophet determines the weight of the ounce made of silver in Mecca which was 40 <sup>(2)</sup> dirham <sup>(3)</sup>. It was used <sup>(4)</sup> to define the zakat due the prophet said no zakat if you have less five ounces the legal ounce in weighing the goods is the abstract ounce the in the Baghdad pound as ali mobarak said equals 10 dirhams and 5/7 dirham The pound<sup>(5)</sup>

The Arabian <sup>(6)</sup> pound equals <sup>(7)</sup> 12 ounces<sup>(8)</sup> it was widely used by Muslims <sup>(9)</sup> the jurists wanted to define the Baghdad <sup>(10)</sup> pound to make correct judgment<sup>(11)</sup> it was called the Iraqi pound.

It was called Iraqi pound to mark it from other pounds. The pound is very important in Islamic sharia because it is the basic tool which defines the weights in markets <sup>(12)</sup>. Ibn kadama said that the Iraqi pound equals 128 dirham and 4\7 dirham <sup>(13)</sup>

<sup>1</sup> Imam Muslim : saheeh Maslim collected by foad abdel Baki the book of success dowry section Hadith 1426 halabi edition 1955 p 355.

<sup>2</sup> El Blazery :invasion of countries p 453.

<sup>3</sup> El Bokhary saheeh El Bokhary, by taha abdel Raof saael zakat book hadit 1447 p 383

<sup>4</sup> El makreezy (Taki El Dien ahmed Ali t 845) the essence of money by professor Mohamed abdel satar Othman first edition Cairo 410 /1990 p 106.

<sup>5</sup> The baghdad pound : it is the pound which is considered by scientist as the basic main of legal dealings Ibn refa: the clarification and evidence to know the bushels and scales by Mohamed Ismael El kharof though House Damascus 1980 p54 ..

<sup>6</sup> Ali mobarak : the scales in measurements and weights the religious culture library Cairo 2000 p90-9

<sup>7</sup> El kawarezmey: the keys of science by Ibrahim El Ebyary the Arab book house Beirut 1984 p 30

<sup>8</sup> Ebn abdeen El antry weights and bushels, manuscript in the Egyptian book house no 338 p3

<sup>9</sup> It was widely used in Arab countries specially in the markets of Baghdad which was north East of the island it was known as the pound of Baghdad until Islam prevails it was used to weigh it was also used in the ummayad era and Abbasi era and the clever Imams so it was called the legal pound see Mohamed Abo El –Ela El Banna: summary of the written researches in bushels and weights and legal money with the unit of distilled water 4 centigrade Dar El Anwar Cairo 1953 p 30

<sup>10</sup> Ahmed El Hegy: the legal amounts bushel and weights and legal rules and the modern ones sharia magazine and Islamic studies Kuwait 1986. Ali Goma : bushels and legall weights Cairo 2001 p 29

<sup>11</sup> Ibid p 190

<sup>12</sup> Bn El Refa Ibid p. 55

<sup>13</sup> Ibn kodama (Mohamed Mowfak Eldien Abdollah Ahmed Mohamed 620) El Moghany Cairo 1968 10 parts part p. 314



The quintals There is no snag called quintals in the past people used it to weigh certain rate <sup>(1)</sup> the Egyptian quintals consists of 100 pounds each pound equals 144 <sup>(2)</sup> dirhams. It was called pepper quintals and was used to weigh spices and other products <sup>(3)</sup> these weights were used on the scales bars

We find that the making of scales was made by many scientists and craftsmen who make the general structure by using different materials from iron and copper they have the ability to shape it to serve Islamic law and helps to perform zakat Mathematicians did great job to make this instrument the design the scales bars and made the pommel which create the balance there were craftsmen who make great ornaments. The calligrapher used their skills to write the advantages of the scales. There were other people who took care of maintaining correct weight who are the weight expert. We find that the man is the axis of this civilized structure that made this machine and contributed efficiently in making certain artistic jobs the making of the scales is a symbol of the evolution of the human element and affected greatly other civilizations. It will be immortal legacy which show what our incestors exerted to evolve their science which other civilizations used to develop theirs. We have studied the model of Roman scales and the models of Coptic scales and we showed its different components. We have found out some copper pommels and studied the writing and ornaments on them in Seljuk era on in the Othman era.

Some writings show us the person whose job is to inspect supply stores and his name was carved on the scales some of the scales have ornaments in the style of Rococo which shows that it is from the Othman artistic ant quity The study shows the used weights which are the ounce, dirham and quintals and marks wore made on the scales bar.

<sup>1</sup> Khaled Ramadan: measurement in the folklore ya'rob House of studies Damascus 1992 first edition p. 83

<sup>2</sup> El kalkashandy (shehab El Dien Abo El Abas Ahmed Ali) sobeh El Asha part three the general commission of culture palaces , Cairo, 2004, p. 445

<sup>3</sup> Hents (falets): Islamic weights and bushels and its equivalent in the metre system translated by kamel El Asaly Jordanian university publication, Amman, 1970, p. 41



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# *The Plates*







**Panel (1): The static balance in the Museum of the Gayer Anderson**



**Panel (2): The balance second static balance in the Museum of the Gayer Anderson**





**Panel (3): The lever short term Mahfouz Museum Gayr واللسانان بقبان  
Anderson**



**Panel (3): The bottom part of the steering column Mahfouz واللسان بقبان  
Museum Gayr Anderson**





**Panel (4): Implementing decorations on the lever short former بالقبان**



**Panel (5): Manner on the lever الركوكو Details from executing decorations  
بالقبان short former**





**Panel (6): Botanical sections of the Center Sarow tree on the head Lawzi, which ends by the short arm بالقبان**



**Panel (7): A new form of the balance of the defining factor in the Museum of the Anderson**





**Panel (8): The head of the Short arm of the former بالقبان**



**Panel (9): A Coptic Weighbridge Mahfouz Coptic Museum in Cairo**





**Panel (10): The steering column divisions defining factor saved Coptic Coptic Museum in Cairo**



**Panel (11): Models reserved in the Museum of the Anderson للرمامين**





**Panel (12): Rumana copper decorated plant motifs Anderson Museum**



**Panel (13): The form of the section of the vegetation on the Al-ramanah former copper**





**Panel (14): Rumana port copper with writings backup line inside four**



**chambers of the surroundings**

**Panel (15): Rumana port copper by free writings on the floor of the vegetarian reserved in the Museum of the Anderson**







**Panel (16): The side of the previous Al-rumana refers to a part of the writings which carried out the surroundings**

