

**A Ramesside Hieratic Ostrakon in the Egyptian Museum, Cairo  
(O. Cairo JE72457/ SR 1472)\***

**Marwa A. Ewais**

Egyptology Department, Faculty of Archaeology, Fayoum University, Egypt  
Maa24@fayoum.edu.eg

**Abstract:** This paper aims to publish and study the hieratic ostrakon (O. Cairo JE72457/ SR 1472). It is an account text that relates to the grain rations and the distribution of water. It is an important addition to the very few documents on water distribution. The palaeography and the content suggest that this ostrakon can be dated to the Ramesside Period, the first half of the 19<sup>th</sup> Dynasty- Ramesses II.

**Keywords:** Ostrakon, Hieratic, Distribution of water and grain, O. Cairo JE72457, SR 1472, Ramesside Period, Ramesses II.

**شقافة هيراطيقية من عصر الرعامسة محفوظة بالمتحف المصري بالقاهرة  
(O. Cairo JE72457/ SR 1472)**

مروة أحمد عويس علي عبدالله

قسم الآثار المصرية كلية الآثار، جامعة الفيوم، مصر  
Maa24@fayoum.edu.eg

**المخلص:** تهدف هذه الورقة البحثية لدراسة شقافة هيراطيقية رقم (O. Cairo JE72457/ SR 1472) محفوظة بالمتحف المصري بالقاهرة. وفقاً لسجلات المتحف تم العثور على هذه الشقافة في وادي الملوك أثناء حفائر Theodore Davis، والتي تُمثل قائمة حصص العمال من الحبوب والمياه لكلا جانبي فرقة العمل. وتكمن أهمية دراسة هذه الشقافة في محتواها الخاص بتوزيع حصص المياه على العمال، حيث إنه لا يوجد سوى عدد قليل ونادر من الوثائق حول هذا الموضوع. ووفقاً للسجلات الخطية وكميات حصص العمال من الحبوب وتوزيع المياه، من المرجح أن تُؤرخ هذه الشقافة إلى فترة الرعامسة، وخصوصاً النصف الأول من الأسرة التاسعة عشر - عهد الملك رمسيس الثاني.

**الكلمات الدالة:** شقافة، هيراطيقي، توزيع المياه والحبوب، O. Cairo JE72457، SR 1472، عصر الرعامسة، رمسيس الثاني.

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## 1. Introduction:

The hieratic ostrakon O. Cairo JE72457/ SR 1472 (Fig. 1–2) is a fragment of a limestone measuring 8.5 x 12 cm, written on both sides. According to the *Journal d'Entree*, this ostrakon was found in the Valley of Kings during the excavation of Theodore Davis. The ostrakon is broken into 6 fragments joined 3 by 3 vertically and can be partially reunited horizontally. It shows seven lines of hieratic writing on the recto, in black and red ink, and six lines in black ink on the verso. The top recto represents the top verso. On the recto, the middle part of all lines is missing and there are traces of palimpsest. Due to the lack of preservation, the last parts of lines 1-2, 5-6 are damaged. Only a few traces of line 7 are preserved. On the verso, again the middle part of all lines is missing. The beginnings of lines 4-6 are lost. After line three there is a space for another line but there are no traces of ink. The text on the recto gives an account of the wages given to the workmen and on the verso there is an account of the distribution of water and grain.

Although a preliminary transcription was made by Jaroslav Černý in his notebooks (now in the Griffith Institute in Oxford<sup>1</sup>), this ostrakon has remained unpublished, and the Deir el-Medina Database Leiden mentioned it in his records<sup>2</sup>.

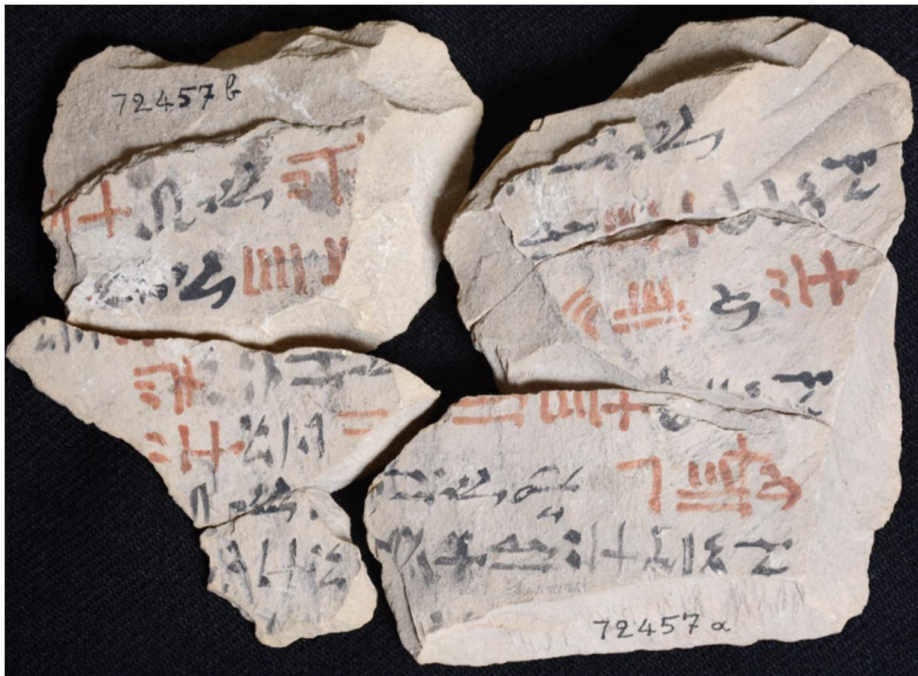


FIGURE 1: O. Cairo JE72457A-B Recto © The Egyptian Museum in Cairo

<sup>1</sup> Jaroslav Černý, Notebook, NB, 106.9. I am grateful to the staff of the Griffith Institute Archive Oxford for granting me access to this material.

<sup>2</sup> See: Deir el-Medina Database of Leiden University = <<http://dmd.wepwawet.nl/>>, accessed 24 January 2022.

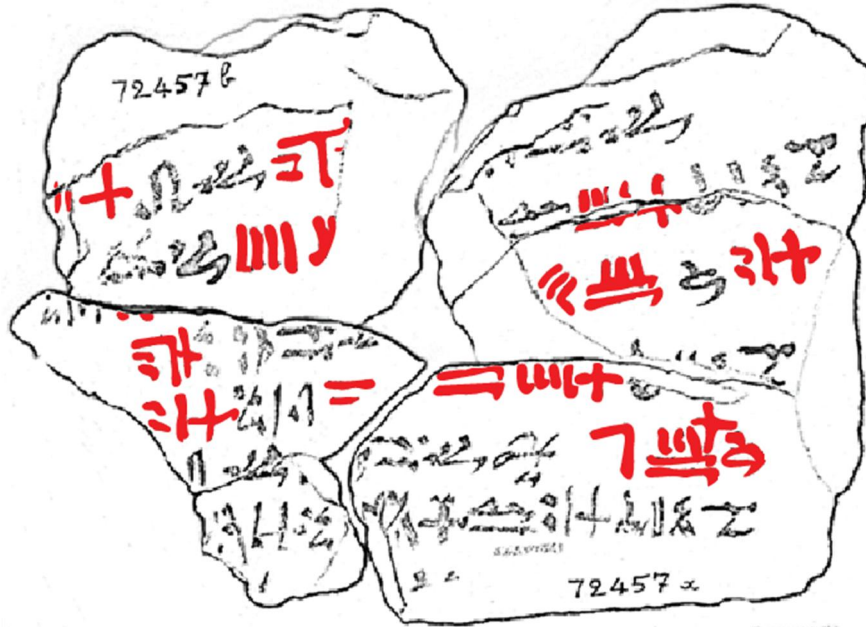


FIGURE 1a: Facsimile of O. Cairo JE72457A-B Recto. By Marwa. A Ewais

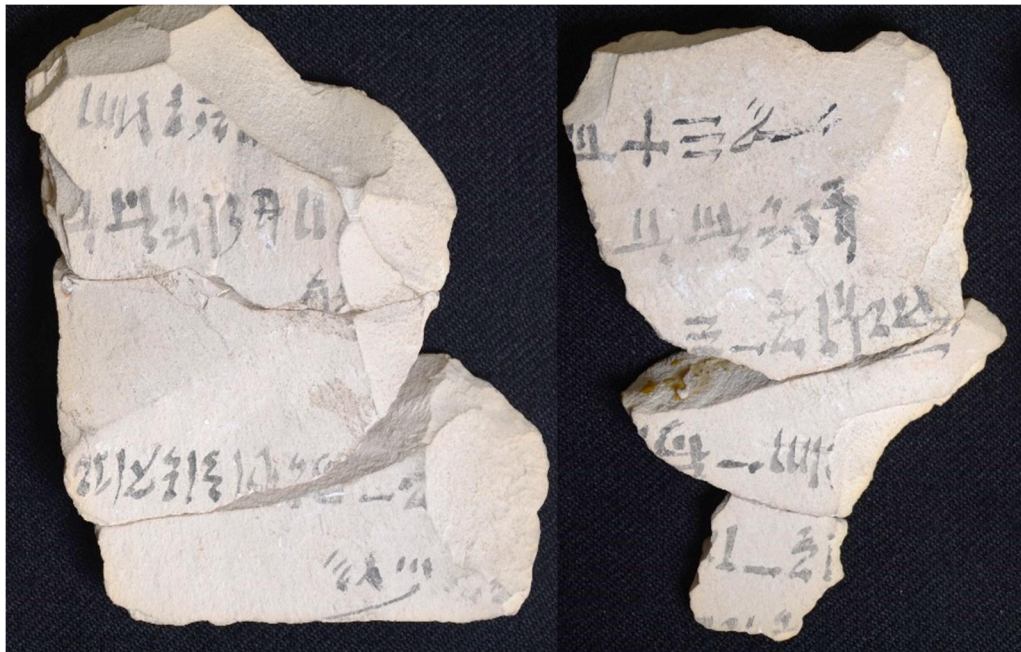


FIGURE 2: O. Cairo JE72457A-B Verso © The Egyptian Museum in Cairo

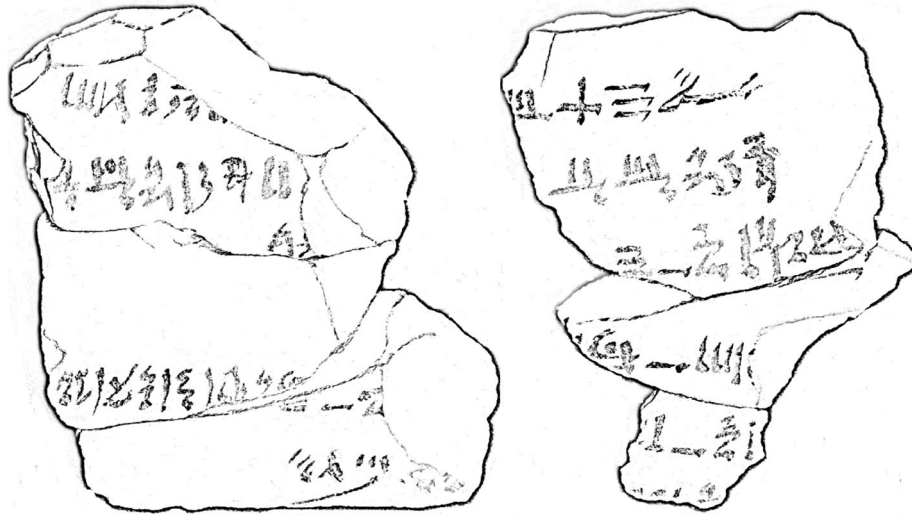
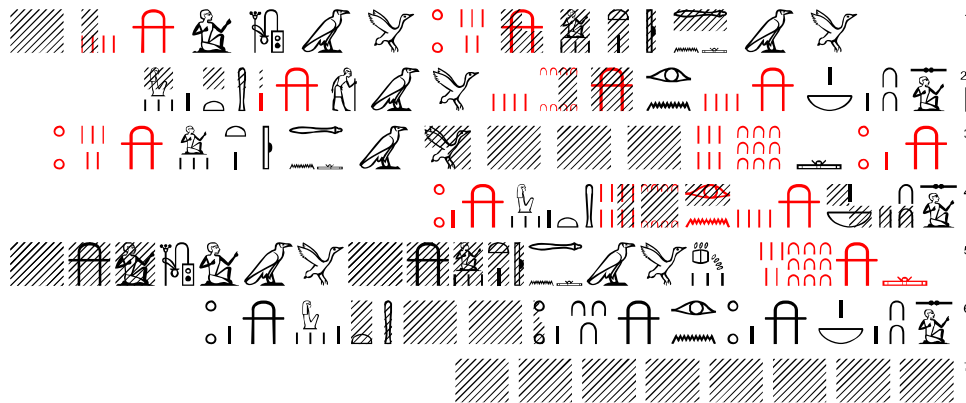


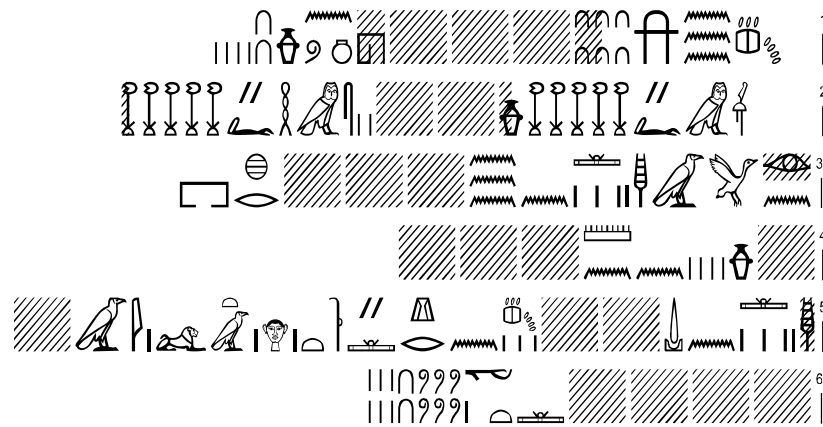
FIGURE 2a: Facsimile of O. Cairo JE72457A-B Verso. By Marwa. A Ewais

**2. Hieroglyphic Transcription:**

*Recto*



*Verso*



### 3. Transliteration and translation:

*Recto*

1- p3 [ɿ n ist h3r]<sup>(a)</sup> 5 1/2 p3 sš h3r  
4 [...]

2-s 21 w<sup>c</sup> nb<sup>(b)</sup> h3r 4 ir.n<sup>(c)</sup> [h3r] 84  
p3 i3w h3r [1 hmwt ]

3- h3r 1 1/2 dmd<sup>(d)</sup> 96 [...] p3 ɿ n ist  
h3r 5 1/2

4- s 22 w<sup>c</sup> nb h3r 4 ir.n [8]8 hmwt  
h3r 1 1/2

5- dmd h3r 95. it p3 ɿ n ist [h3r 2],  
p3 sš [h3r 1 1/2]

6-s 21 w<sup>c</sup> nb h3r 1 1/2 ir.n h3r 31  
[1/2...] hmwt h3r 1 1/2

7- [.....]

*Verso*

1-hkt mw h3r 60[...] hnw 24

2- wnmy 5000 [...]2 smhy 5000

3- ir.n p3 ɿ n mw(e) [...] hr

4- [...] 4 n mn [...]

5- ɿ n wd3t<sup>(f)</sup> [...] it<sup>(g)</sup> n hrt-rnpt<sup>(h)</sup> hr  
t3 ri.t [...]

6- [....dmd] ht 626

*Recto*

1- [The foreman], 5 ½ [khar]. The scribe,  
4 khar[....].

2- 21 men, everyone, 4 khar, making 84  
[khar]. The older, [1] khar. [Women  
servants],

3- 1 ½ khar. Total 96[....] The foreman, 5  
½ khar.

4- 22 men, everyone, 4 khar, making [8]8.  
Women servants, 1 ½ khar.

5- Total 95 khar. Barley rations, The  
foreman, [... khar]. The scribe, [.... khar].

6- 21 men, everyone, 1 ½ khar, making 31  
[½ ..... Women servants], 1 ½ khar

7-[.....]

*Verso*

1- Hekt, water 60 khar[....] 24 Henu.

2- Right, 5000[....] 2. Left 5000.

3- Making the amount of water [to the  
workmen of the] Tomb?.



4- [....] 4 mn? [....]

5- The amount of reminder, [....] annual  
requirements of grain, side of [....]

6- [....total] wood 626.

### 3. Paleographical remarks

*Recto*

**L.1a**  : on the basis of the faint traces that remain, this word could be  ɿ n ist. It is very similar to the forms in line 3, on O. DeM. 837<sup>1</sup> and O. Ashmolean Museum 08.<sup>2</sup>

**L.1b** The end of this line is destroyed. It represents the scribe ration of the grain, according to the total of grain rations of the first side; Černý<sup>3</sup> completes it to represent the number 4.

**L.2a** Černý<sup>4</sup> completes the damaged part to represent the total amount of grain to the 21 men.



<sup>1</sup> Pierre Grandet, *Catalogue des ostraca hiératiques non littéraires de Deir el-Médinéh. Tome IX: N° 831-1000*, (Le Caire: Imprimerie de l'Institut français d'archéologie orientale, 2003), 204.

<sup>2</sup> Jaroslav Černý and, Alan Gardiner, *Hieratic ostraca*, Volume I, (Oxford: The Griffith Institute - Oxford University Press, 1957), pl. 31 no. 3.


<sup>3</sup> Černý, *Notebook*, 106.9.


<sup>4</sup> Černý, *Notebook*, 106.9.



**L.2b**  Černy<sup>1</sup> transcribed this group to represent two strokes. However, this group of writing may represent .

**L.3a** The middle of the line is missing, but it represents the total amount of the grain rations to the side.



**L.3b** The scribe ignores the sign  (V19) which must appear after the *dmd*.

**L.5a** : The place of the sign *h3r* shows that it was forgotten by the scribe and then it was inserted later when he recognized that it was missing or after his revision to the text.

**L.5b**: The ration of the foreman and the scribe is lost in line 5 but one could reconstruct it according to O. DeM 177, 6 and O. Cairo CG 25809 where the foreman takes 2 khar and the scribe receives 1 1/2 khar<sup>2</sup>.


**L.5c**: This rubric is a very good example that this part in red was added later because *there is a blank space after it*.

**L.6a** At the end of this line, there are traces of palimpsest.

**L.6b**  according to the traces, this word represents .

**L.7a**: Perhaps this line was likely as 3 and 5. It should represent the total of the barley rations.

*Verso*

**L.1a** : It represents a part of the word *hnw* where it appeared with the same form in O. Michaelides XLVIII<sup>3</sup>, and O. DeM 122<sup>4</sup>.

### Commentary:

(a) *h3r*: In this ostrakon, after each workman, a quantity is mentioned expressed in *h3r*. It is a common measure of capacity during the New Kingdom (1 khar= 76.88 litres)<sup>5</sup>. Through Deir el-Medina ostraca *h3r* is used to measure a quantity of water<sup>6</sup>, grain<sup>7</sup>, and gypsum<sup>8</sup>.

(b) *w<sup>c</sup> nb*: This means everyone or each<sup>9</sup>. This term is always followed by a quantity or an amount and a total represented in the term *ir.n* "making" which refers to the process of straightforward multiplication.

<sup>1</sup> Černy, *Notebook*, 106.9.

<sup>2</sup> Sometimes the scribe receives 2 khar of barley as O. Cairo 25608.

<sup>3</sup> Hans Goedicke & Edward Wente, *Ostraka Michaelides*, (Wiesbaden: 1962), Pl. XVIII.

<sup>4</sup> Jaroslav Černý, *Catalogue des Ostraca Hiératiques non Littéraires de Deir el Médineh N°114-189*, (Le Caire: Institut français d'archéologie orientale, 1937), 3, pls. 5 and 5A.

<sup>5</sup> Janet Jac J Janssen, "The Water Supply of a Desert Village", *Bulletin of the Medelhavsmuseet* 14, (1979): 12.

<sup>6</sup> For instance, O. Ashmolean. Mus. 87; O. DeM 60; O. Ashmolean. Mus. 116 and O. DeM 877 about water rations.

<sup>7</sup> The complete documents of grain rations are O. DeM 376 and O. Cairo CG 25608 recto.

<sup>8</sup> For instance O. Ashmolean Museum 113, O. DeM 330.

<sup>9</sup> See for instance O. Cairo CG 25592, 4,5; O. Turin N. 57429, I, 7-9.

(c) *ir n*: In general, this term expresses the total or the sum, and it means "making"<sup>1</sup>. It is frequently used in rations distribution documents of Deir el-Medina. The formula runs as: *ir.n* + number of rations that express the result of multiplying the total number of men by the ration received for each of them. This term was usually followed by the *dmd* "total" in the same line or the next line, as is clear in the ostrakon under study.

(d) *dmd*: The term *dmd* means "total" and expresses the final operation in accounting. It is attested as one of the accounting terminologies known since the Old Kingdom<sup>2</sup> that continued in Late Egyptian<sup>3</sup>. It usually appears in a brief form ~~ⲁⲙ~~ on the ostrakon<sup>4</sup>. Its use has remained constant over time in ration menus<sup>5</sup>.

In the Middle Kingdom account sources, this term is usually written at the end of the calculation, and it appears in a single line starting with *dmd* only then followed by the number<sup>6</sup>. It is a very common term which is a characteristic in New Kingdom administrative documents. It appears on a very wide range of Deir el-Medina ostraca. Its positions in the text during the New Kingdom differed from what was common in the Middle Kingdom, as it no longer occupied a single line rather, it was written in the context of the lines and more than once in one line after enumerating different quantities of goods and commodities<sup>7</sup>. On this ostrakon, the final totals of the individuals' recipients' rations are in lines 3 of recto (the sum of totals in lines 1, 2, and 3) and 5 (sum of totals in lines 3, 4, and 5). Line 7 is damaged but it may represent the total (the sum of totals in lines 5 and 6).

The ostrakon has more than one total, by using the sub-total represented in the formula *ir.n* "making", and the grand total represented in the term *dmd* in recto and verso. The calculation on the recto is correct.

(e) *ḥḥ*: The word *ḥḥ* means "quantity"<sup>8</sup> and "amount"<sup>9</sup>. It is derived from the word *ḥḥ* "pill"<sup>10</sup>. This term is widely used in accounts detailing deliveries of goods and commodities such as wood<sup>11</sup>, copper<sup>12</sup>, silver<sup>13</sup>, fish<sup>14</sup>, and grain<sup>15</sup> than its use in ration payments. It is attested as a title in some of Deir el-Medina distribution account

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<sup>1</sup> For example, O. DeM 186; O. Ashmolean. 184; O. DeM 252.

<sup>2</sup> Paule Posener-Kriéger, *Les Archives du temple funéraire de NéferirkarêKakaï*, BdE 65, 2 vols, (Cairo: 1976), 215-218.

<sup>3</sup> *Wb*, V, 460-461; Thomas James, *Hekanakhte Papers and Other Early Middle Kingdom Documents*, (New York: The Metropolitan Museum of Art, 1962), pl. 10 A, 11 A 13 A.

<sup>4</sup> It appears in this brief form in the ostrakon under study in line 3, 5 recto and line 6 verso. For other examples see P. Grandet, 2000, pl. 715, 719, 740, 741, 743, 745, 746 V, 765, 767, 769.

<sup>5</sup> Richard Mandeville, *Wage Accounting in Deir el-Medina*, (Abercromby press 12a elm park road wallasey united kingdom, 2014), 37.

<sup>6</sup> For example El-lahun account papyri, see Mark Collier & Stephen Quirke, *The UCL Lahun Papyri: Religious, Literary, Legal, Mathematical and Medical*, (Oxford: BAR Publishing, 2006).

<sup>7</sup> O. Cairo CG 25237, O. DeM 10097, O. Cairo CG 25264.

<sup>8</sup> *Wb I*, 220, 10-221, 1.

<sup>9</sup> Van Heel Donker & Ben Harring, *Writing in a workmen's village: scribal practice in Ramesside Deir El-Medina*, (Leiden, 2003), 140.

<sup>10</sup> Mounir Megally, "Recherches sur l'économie, l'administration et la comptabilité égyptiennes à la XVIIIe dynastie: d'après le papyrus E. 3226 du Louvre", *BdE 71*, (Cairo: IFAO, 1977): 57.

<sup>11</sup> O. Berlin P 1268 verso.

<sup>12</sup> O. Ashmolean Museum. 63; O. Cairo CG 25642.

<sup>13</sup> O. Cairo CG 25742, 6.

<sup>14</sup> O. Fitzwilliam Museum 103.1949 verso.

<sup>15</sup> O. Ashmolean Museum 108 recto, 1

documents<sup>1</sup>. The use of this term in accounting documents has been associated with other terminology, such as *wḏ3t* in this ostrakon.

The formula  $\text{ḥ}^{\text{r}} n$  appeared in the ostrakon in two types: 1)  $p3 \text{ ḥ}^{\text{r}} n$  2)  $\text{ḥ}^{\text{r}} n w\text{ḏ}3t$ .

1) -The formula runs as the definite article  $p3$  +  $\text{ḥ}^{\text{r}}$  + indirect genitive article  $n$  + material + unit  $x$ . "Amount of water":  $x$  ( $\text{ḥ}3r$ ), followed by a quantity of water distributed to the tomb.

2) - The formula runs as  $\text{ḥ}^{\text{r}} n$  + the term *wḏ3t* "Amount of remainder of, followed by material or number.

(f) *wḏ3t*: The typical translation of this term is "reminder"<sup>2</sup>, "balance"<sup>3</sup>, "deficiency"<sup>4</sup>, "rest"<sup>5</sup>, "arrears" or "owed"<sup>6</sup> but it has also varied meanings within the rations material according to the context of the text.

Like most of the instances in Deir el-Medina account sources, the term *wḏ3t* appears in the list of recipients with different materials as rations. It is usually preceded by the term *dmd*<sup>7</sup>. In the ostrakon under study, the term *wḏ3t* is followed by the total.

The term *wḏ3t* is commonly used in distribution documents of fish, wood, pottery, and is sometimes used in documents of the distribution of water<sup>8</sup>.

The reminder is mentioned in verso line 5, it relates to grain but the quantity is not preserved.

(g) The ostrakon represents the distribution of grain rations to the workers. The first type was not mentioned, but through the percentage of distributed rations, it represents emmer (*bty*), based on O. DeM 179, O. DeM 182, O. DeM 276, O. UC39626 and O. Strasbourg H 110 which mentioned the same product and O. Cairo JE 72455, O. DeM 177 and O. DeM 179 which contain the same rations for the workmen. Concerning the word *it* in recto line 5; it refers to barley as barley is usually denoted as *it*<sup>9</sup>.

(h) *hrt-rnpt*: This expression is one of the most frequently used expression in the Necropolis administration documents to mean "annual" or "yearly requirements"<sup>10</sup>. After this expression, a side of the gang was mentioned, but as a result of the fragmentary that took place in this part of the ostrakon, we did not know which side exactly, then it is assumed that the number of annual barley requirements for this side will be mentioned.

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<sup>1</sup> Donker & Haring, *Writing in a workmen's village: scribal practice in Ramesside Deir El-Medina*, 140-141.

<sup>2</sup> Megally, "Recherches sur l'économie, l'administration et la comptabilité égyptiennes à la XVIIIe dynastie: d'après le papyrus E. 3226 du Louvre", 39.

<sup>3</sup> LD, I, 121.

<sup>4</sup> Rainer Hannig, *Ägyptisches Wörterbuch. Band I: Altes Reich und Erste Zwischenzeit*, (Mainz: Philipp von Zabern Verlag 2003 -2006), 141; Raymond Faulkner, *A Concise Dictionary of Middle Egyptian*, (Oxford: Griffith institute-Ashmolean museum, 1962), 318.

<sup>5</sup> Wb, V, 517, 3; Hannig, *Ägyptisches Wörterbuch*, 248.

<sup>6</sup> Mandeville, *Wage Accounting in Deir el-Medina*, 37-40.

<sup>7</sup> Mandeville, *Wage Accounting in Deir el-Medina*, 42.

<sup>8</sup> Hannig, *Ägyptisches Wörterbuch*, 141-143.

<sup>9</sup> See O. DeM 181,3; O. DeM 611,2 and P. Turin Cat. 1906+1939, verso 1:2, 2:12.

<sup>10</sup> P. Turin 1906, recto 4, 9= *KRI* VI 627, 11; O. Fitzwilliam Museum EGA 103.1949, verso 3 and 5 (unpublished).



## Discussion:

Several documents that were revealed in Deir el-Medina explain the status and division of labor in the administration. Accounting documents especially ration documents; shed light on the situation of these workers and their way of living. In this community, the workmen were divided into two sides of the tomb, the right side called (*wnmy*), and the left side called (*smhy*)<sup>1</sup>. Each side was administrated by a group of workmen, their numbers varied according to different periods<sup>2</sup>. On their head was a foreman "ꜥ3 n ist" followed by the scribe "sš" as a supported force. Then, they were followed by a group of workers whose rations vary according to their social status, such as a group of workmen without titles for specific tasks, old men "i3w", youths "mnh", healers "swnw", guards "s3w", doorkeeper "iry-ꜥ3", and female servants "hmwt". In addition, there was a support group from workers from outside the village who were called "smd.t r bnr". They were responsible for delivering some products unavailable in the village such as water, wood, vegetables, and fish to workmen of the institution<sup>3</sup>.

There are many texts for the delivery and distribution of rations among workers in the community of Deir el-Medina. From the majority of these texts, it seems clear that there was a consistent basic use of grain and water in rations. In theory, these rations were issued every month, although this rarely occurred in fixed time with different amounts of quotas due based on the worker's status.

Despite the importance of these texts in identifying the social and economic conditions during this period, we must deal with these rations and determine the actual rate of pay at Deir el-Medina with caution and bear in mind the many contradictions that these texts contained and the reasons for these are unknown due to the fragmented archaeological record. For instance, we notice that not all men of the same rank received the same rations. This has been repeated over and over in many ration texts<sup>4</sup>.

In some cases, various texts dealt with the same delivery but had inconsistencies<sup>5</sup>. Sometimes, the same text also related to delivering the grain to the same workers but the value was different. Moreover, most of the deliveries were only one copy so this could be incorrect, especially since errors were common in such documents<sup>6</sup>.

O. Cairo JE72457 is about the distribution and delivery of three different products. The first is about the grain ration list, for both sides? which appears on the recto and the rest of it is completed on verso. The verso includes the distribution of the other two products, water, and wood. The recto mentions twenty-four workers receiving their

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<sup>1</sup> Hannig, *Ägyptisches Wörterbuch*, 144-245.

<sup>2</sup> Davies Benedict, "Variations in the size of the Deir el-Medina workforce", in Camilla Di Biase-Dyson; Leonie Donovan (eds.), *The Cultural Manifestations of Religious Experience Studies in Honour of Boyo G. Ockinga*, (Ugarit-Verlag Münster: 2017), 205-211.

<sup>3</sup> Kathrin Gabler, *Who's who around Deir el-Medina. Untersuchungen zur Organisation, Prosopographie und Entwicklung des Versorgungspersonals für die Arbeitersiedlung und das Tal der Könige*. (Egyptologische Uitgaven: 31. Leiden / Leuven, 2018); Kathrin Gabler, "Can I stay or must I go? Relations between the Deir el-Medina community and their service personnel", in: A. Dorn & S. Polis (eds.), *Outside the Box. Selected papers from the conference "Deir el-Medina and the Theban Necropolis in Contact"*, *Aegyptiaca Leodiensia* 11, (Liège, 2018): 157-189.

<sup>4</sup> For instance, O. DeM 377.

<sup>5</sup> Janet Janssen, "The daily bread: a contribution to the study of the ancient Egyptian diet", *Bulletin of the Egyptological Seminar*, (1997), 14.

<sup>6</sup> Janet Janssen, "Accountancy at Deir el-Medina: How Accurate Are the Administrative ostraca", *SAK* 33, (2005): 147-157.

rations on both sides. The female servants are included in both ration sides, but their number is not known so they are not included in the twenty-four individuals. Eight individuals, if we deal with each group of workers as a single entry. According to the format of the list, the lines (1-2 until *dmd* in line 3), represents the rations of one side of gang undefined in the ostrakon, while the rest of ration of the same product (emmer) the lines (rest of 3, 4 until *dmd* in line 5) for the other side. The scribe and the old man on the other side are not listed in the ostrakon. Then the scribe completes his list, but with another product "*it*", and it is also possible that there would be quotas for both sides, but there are only quotas left for the workers of one side.

*First: Grain*

Although the first part of the ostrakon did not contain the commodity or product that was delivered, it did contain the measure, which is khar. Khar was a measuring unit used to measure grain, water, and gypsum. By comparing the proportions distributed on the two sides and other ostraca dated to the Ramesside period, one would be inclined to suppose that these quantities were about grain as it appeared explicitly in the fifth line of recto.

At the workmen's community in Deir el-Medina, the grain ration was the most important component of the workmen's wages or rations<sup>1</sup>. The regularity of the process of distributing the grain to the workmen was of very great importance from the economic and social point of view, and sometimes the delay in the workmen receiving their quotas for any reason led to strikes<sup>2</sup>.

Grain in Deir el-Medina was always delivered to the workmen<sup>3</sup> and was distributed as a monthly payment<sup>4</sup>. This distribution took place on the first day of the month, or at least on the last two days of the month preceding the following month. This is illustrated by O. Munich 307/22a<sup>5</sup> dated to year 28 of Ramesses III states that ration was distributed on the day 30.

We do not have accurate or conclusive information on dated grain prices<sup>6</sup> as the exact wage for workmen varied considerably over time. From the reign of Ramesses III to Ramesses VI the normal price for grain ranges between 1–2 khar, while through the reign of Ramesses VII to Ramesses X and the first years of Ramesses XI the grain pay is higher than 2 khar<sup>7</sup>. The grain rations reflect the status of the recipients as the position

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<sup>1</sup> Jaroslav Černý, "Prices and Wages in Egypt in the Ramesside Period", *Cahiers d'Histoire Mondiale* I/4, (1954), 903–21; Janet Jassen, *Commodity prices from the Ramessid Period: an economic study of the village of necropolis workmen at Thebes*, (Leiden, 1975): 457–61; Jassen, "The daily bread: a contribution to the study of the ancient Egyptian diet", 1–35.

<sup>2</sup> Jean-Christophe Antoine, "The Delay of the Grain Ration and its Social Consequences at Deir el-Medina in the Twentieth Dynasty: A Statistical Analysis", *JEA* 95, (2009): 223-234.

<sup>3</sup> Jassen, "The Water Supply of a Desert Village", 12-13.

<sup>4</sup> Hana Vymazalova, "Ration System", *UCLA Encyclopedia of Egyptology*, (2016): 1(1).

<sup>5</sup> Jaroslav Černý, "Egypt from the Death of Ramesses III to the End of the Twenty-First Dynasty", in I. E. S. Edwards, C. J. Gadd, and N. G. L. Hammond (eds.), *Cambridge Ancient History*, II/2, (Cambridge, 1975): 622.

<sup>6</sup> Jassen, *Commodity prices from the Ramessid Period*, 112–32.

<sup>7</sup> Jassen, *Commodity prices from the Ramessid Period*, 112–32; Jean-Christophe, "The Delay of the Grain Ration and its Social Consequences at Deir el-Medina in the Twentieth Dynasty: A Statistical Analysis", 226.

was the only means of pay distinction<sup>1</sup>. The basic ration for a foreman represents 5 ½ khar of emmer and 2 khar of barley thus making him earn the highest amount of barley, while a workman received 4 khar of emmer and 1 ½ khar of barley<sup>2</sup>.

According to Janssen's estimates, 1 khar equals 76.88 liters<sup>3</sup>, and this indicates that the amount of grain that was required daily at Deir el-Medina was about 0.03 khar. Therefore, the workmen and their families needed 0.90 khar of emmer monthly. And this quantity was much less than the 4 khar of emmer that was allocated to workers and their families in the ration documents<sup>4</sup>.

Through lists of wages or payments, it is possible to identify the social status of each group of society, as well as its level of income and ration. The distribution of rations was not only related to the rank, but these rations covered all the workmen's families that confirms this is that the *mnḥ.w* were receiving a smaller ration, and this was not only because they were a lower class, but also because they did not have family obligations as they were not married<sup>5</sup>.

In O. Cairo JE72457, the same order of workmen appears three times in succession on the recto, the recipients were arranged according to the highest position meriting different quantities<sup>6</sup>, each time the sequence begins with the foreman, as in the two times his quota was mentioned, it was 5 1/5 khar. The same ration for the foreman is mentioned in O. Cairo JE 72455, O. DeM 177 and O. DeM 179. Then the ration of the scribe was mentioned twice in the first and third list and was not mentioned in the sequence after the foreman in the second list. In Deir el Medina ration distribution documents, the scribe was mentioned sixty one times<sup>7</sup>. His ration was 4 khar and the other time the value was lost.

Then a group of 21 workmen were recorded without titles or names. Each one of them had 4 khar. This ration was similar to that of the scribe's ration. In ration texts, they were listed after the scribe and took the form *s* + number + *w<sup>c</sup> nb ḥ3r* + amount + formula *ir n ḥ3r* + amount.

The old man received only 1 khar, his order in the list came after the 21 workmen. They did not appear much in the lists of rations<sup>8</sup>, as they were listed in a few of them, and their ration was tiny because they were retired and this quota was only considered as a pension for them. The women servants, the doorkeepers, and old men were not recorded in a fixed position in the ration lists, perhaps because they were in a close social position and all were classified as the lowest class<sup>9</sup>.

The women servants were mentioned at the end of the three lists, as they were mentioned and their ration in the second list (i.e. line 4 on recto), while their ration was

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<sup>1</sup> Anne Austin, *Contending with illness in ancient Egypt: A textual and osteological study of health care at Deir el-Medina*, (PhD. Dissertation, University of California, 2014), 135-136.

<sup>2</sup> Andrea McDowell, *Village life in ancient Egypt: Laundry lists and love songs*, (Oxford: Oxford University Press 1999), 231-132; Černý, *A community of workmen at Thebes*, 112-113.

<sup>3</sup> Janssen, "The Water Supply of a Desert Village", 12-13.

<sup>4</sup> Elizabeth lang, *The Daily Grind: womens experience of bread-Making in Non-elite Households of New Kingdom Egypt*, (PhD dissertation, Yale University, 2017), 135

<sup>5</sup> Janssen, "The daily bread: a contribution to the study of the ancient Egyptian diet", 19.

<sup>6</sup> Mandeville *Wage Accounting in Deir el-Medina*, 86-9.

<sup>7</sup> Mandeville, *Wage Accounting in Deir el-Medina*, 100.

<sup>8</sup> Mandeville, *Wage Accounting in Deir el-Medina*, 88.

<sup>9</sup> Černý, *A community of workmen at Thebes*, 161-174.

only in the first and third list (line 3 and 6) which is estimated to 1 1/5 khar. It was customary in the ration lists to mention a group of women. The women servants were recorded in fifty account distribution lists<sup>1</sup> and their position was usually at the end of the list. This was due to their work as supporting staff of the tomb workmen. Like workmen, the administration paid ration to those women and this means that these women were associated with the institutions that ran Deir el-Medina to the large temples of the Theben West Bank<sup>2</sup>.

In the ration texts, these women were always included as an uncountable group as mentioned on the ostrakon under study, but this does not mean that no number of them was mentioned, but in some cases, different numbers of them were mentioned, such as one woman<sup>3</sup>, and in some others, 15 women were mentioned<sup>4</sup>. Whether these groups of women servants were numbered or not, they were connected to only one side of the village<sup>5</sup>.

Barley is mentioned again on the verso of the ostrakon, but this time the barley quantities were specifically categorized as annual requirements.

#### *Second: Water*

Water was also distributed to the workmen just as grain was and the same measuring unit khar was used. This distribution is on the verso of the ostrakon.

Since water is an important necessity of life and is an essential material, it was delivered and distributed to workmen as a free ration without price by the administration<sup>6</sup>.

The *inw-mw*, the "water carriers" almost only known from Deir el-Medina sources<sup>7</sup>, and the first appearance of this title was during the reign of Ramesses II<sup>8</sup>. Water carriers were particular workers belonging to the group of "*smd.t*" staff<sup>9</sup> who carried water from some places near the Nile because the village and worksites did not contain a water well. They were responsible for each day's delivery of water. Most of them probably

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<sup>1</sup> Tobias Hofmann, "Arbeitseinsätze und Löhne der sogenannten Sklavinnen von Deir el-Medine", in Andreas Dorn. A and Tobias Hofmann T. (eds.), *Living and Writing in Deir el-Medine. Socio-historical Embodiment of Deir el-Medine Texts*, AH 19, (Basel: Schwabe, 2006): 113-118.

<sup>2</sup> lang, *The Daily Grind: womens experience of bread-Making in Non-elite Households of New Kingdom Egypt*, 119.

<sup>3</sup> Černý, *A community of workmen at Thebes*, 176; Jassen, *Commodity prices from the Ramessid Period: an economic study of the village of necropolis workmen at Thebes*, 460.

<sup>4</sup> Schafik Allam, *Hieratische Ostraka und Papyri aus der Ramessidenzeit*, Band I. Textteil, (Tübingen: Selbstverlag der Hausgebers, 2001), 396.

<sup>5</sup> Černý, *A community of workmen at Thebes*, 177.

<sup>6</sup> Except for some references to its use at a price, which are represented in the following documents: Ostr. 63, I, 5; O. Cairo CG 25 687, 2; O. Brussels E 6339, 4.

<sup>7</sup> Gabler, *Who's who around Deir el-Medina. Untersuchungen zur Organisation, Prosopographie und Entwicklung des Versorgungspersonals für die Arbeitersiedlung und das Tal der Könige*, 158.

<sup>8</sup> O. Ash. Mus. 161, 165 and O. DeM 351, 370.

<sup>9</sup> It includes more than ten different professions. For more information about the title *inw mw*, see Kathrin Gabler, *Who's who around Deir el-Medina. Untersuchungen zur Organisation, Prosopographie und Entwicklung des Versorgungspersonals für die Arbeitersiedlung und das Tal der Könige*, Egyptologische, chapter 3; Janet Janssen, *Village Varia: Ten Studies on the History and Administration of Deir el-Medina*, EU 11, (Leiden:1997), 1-8; Sofia Häggman, *Directing Deir el-Medina. The External Administration of the Necropolis*, (Uppsala: 2002), 94-106.

lived outside the village<sup>1</sup> and the primary means by which they carried the water to the village were hired donkeys<sup>2</sup>. The water-carriers of Deir el-Medina village were all male, as were all the service personnel. The title water-carrier appears more in the ostraca than does the other of *smd.t* titles; this clearly expresses the daily need for water in the village<sup>3</sup>.

Many documents referred to the daily examination and recording of the performance of water-carriers<sup>4</sup>. Despite their very important role in the Deir el-Medina community, whether for the workmen and their families or even for the work area to contribute to the construction of the royal tombs, they were classified to the lowest category of the population<sup>5</sup>.

There was another term for the water carrier which is *ḥꜣi mw*<sup>6</sup> and using this title is nothing but an expression and a description of his tasks. P. Turin Cat. 1880, O. Ashmolean. Mus. 169, O. DeM 154 and O. Ashmolean. Mus. 1945.39 contain the same expressions dating to Ramesses III.

Sometimes there was confusion in determining the proportions of rations if they referred to grain or water, especially when the type of commodity to be delivered was not specified in the text<sup>7</sup>.

According to water ration texts, the average daily quota of water for a workman or for household could be 1 ¼ khar<sup>8</sup>. We must bear in mind that the worker's ration of water includes the whole family as his grain ration<sup>9</sup>. It is also noted that the use of water was not limited to drinking and cooking, but may also have been for cleaning and ritual purposes and for the animals that the inhabitants were raising<sup>10</sup>.

O. Qurna 621/1<sup>11</sup> mentioned that the man called *ḥꜣtyꜣ* received 2 2/4 khar. The ration here relates to water, and since the estimated share for each workman was 1 ¼ khar<sup>12</sup>, then this man who was mentioned in O. Qurna 621 with the largest share is likely to be either the foreman or the scribe.

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<sup>1</sup> Bernard Bruyère, *Rapport sur les fouilles de Deir El Médineh (1934-1935) La nécropole de l'Est*, (Le Caire: 1934-5), III, 17; Janssen, *Commodity prices from the Ramessid Period*, 167.

<sup>2</sup> Janet Janssen, *Donkeys at Deir el-Medina*, Nederlands Instituut voor het Nabije Osten, (Leiden: 2005).

<sup>3</sup> Gabler, *Who's who around Deir el-Medina. Untersuchungen zur Organisation, Prosopographie und Entwicklung des Versorgungspersonals für die Arbeitersiedlung und das Tal der Könige*, Egyptologische, 160.

<sup>4</sup> *Ashmolean HO 821*= Stephanie Hudson, "Ostraca Varia: Unpublished Deir el-Medina Ramesside Administrative Ostraca from the Ashmolean Museum", Oxford, *JARCE* 50, (2014): 85-89.

<sup>5</sup> Hudson, *Ostraca Varia*, 89.

<sup>6</sup> P. Turin Cat. 1880= Alan Gardiner, *Ramesside administrative documents*, (Oxford: Griffith Institute, 1948), xiv-xvii, 45-58, no. XVIII; Allam, *Hieratische Ostraka und Papyri aus der Ramessidenzeit*, 310-312, no. 276; Baer, 1965, 431.

<sup>7</sup> O. DEM 10162 according to Černý, *A community of workmen at Thebes*, 113 and (DeM XI, 47-8) is about grain ration while Janssen, *Village Varia*, 19 Note 33) mentioned that it is about water deliveries.

<sup>8</sup> O. Ashmolean Mus. 161, O. UC 39633, O. DeM 189, O. Varille 34, O. BM EA 5635, O. DeM 876, and O. Berlin P 14668.

<sup>9</sup> Selke E. Eichler, "Selke, Untersuchungen zu den Wasserträgern von Deir el-Medineh I", *SAK* 17, (1990): 153.

<sup>10</sup> Gabler, *Who's who around Deir el-Medina. Untersuchungen zur Organisation, Prosopographie und Entwicklung des Versorgungspersonals für die Arbeitersiedlung und das Tal der Könige*, 128.

<sup>11</sup> O. Qurna 621/1.

<sup>12</sup> Janssen, *Commodity prices from the Ramessid Period*, 493.

The amount of water mentioned on the verso of the ostrakon is 60 *h3r*, and according to Janssen's statistics, it is equivalent to 4612.8 liters.

If we consider that the ration of each workman is actually  $1 \frac{1}{4}$ , then the number 60 may represent the total ration of the workmen of both sides mentioned on the recto of the ostrakon, i.e.  $48 \times 1 \frac{1}{4} = 60$  khar.

The water distribution appears in Deir el-Medina account texts in various formulae and expressions:

- A) The first form<sup>1</sup> is with the verb *wḏ3.t*, means (remainder or deficit) to represent the deficit in the water supply to the workmen. This form appears in four forms as:

Form	Sources
<i>Wḏ3.t+n+mw+ name</i>	O. Ashmolean Mus. 87 <sup>2</sup>
<i>Wḏ3.t+n+mw+ nty+ m<sup>c</sup>+ name</i>	O. Ashmolean Mus. 11 <sup>3</sup> , O. DeM 877 <sup>4</sup>
<i>name + wḏ3.t+n+mw + amount</i>	O. BM EA 05635 <sup>5</sup>
<i>Wḏ3.t +mw+ n+ name</i>	O. Berlin P 14327

O. Ashmolean Mus.87 dated to reign of Ramesses II used the formula *wḏ3.t n mw+ NN* preceded with the date, and O. Ashmolean Mus.116 also dated to the reign of Ramesses II, the formula adopted here is *wḏ3.t n mw nty m<sup>c</sup>+ NN*. These ostraca recorded list of rations of water for a number of workmen these rations had probably not been delivered according to the term *wḏ3.t* used here.

O. Berlin P 14327 dated to 19<sup>th</sup> dynasty, recto is about received water and verso starts with the same formula appeared in O. Ashmolean Mus.87 but the preposition *n* precedes the workman name who is lost on the ostrakon. O. BM EA 05635 is an account of a deficit of water, dated to Late 19<sup>th</sup> dynasty, the formula appeared here runs as *NN + wḏ3.t + n + mw + amount*.

These backpay (deficits in ration accounts) were written reminders to the person distributing the rations and following an oral reminder to complete the allotted quota<sup>6</sup>.

- B) The second form is with the verb *ḥ<sup>c</sup>*, to mean (amount). This term appears only on O. Cairo JE. 72457 verso, line 3 as *ir.n p3 ḥ<sup>c</sup> n mw* "Making the amount of water". What makes this ostrakon important to study is that this formula did not appear as the title of the document, as well as its uncommon use with water. The same formula appeared in a private account O. BM EA 5633 dated to

<sup>1</sup> It appears in four ostrakon: O.DeM. 877, O. BMEA 5635, O. Ashmolean 116, O. Ashmolean 87.

<sup>2</sup> Černý-Gardiner, *Hieratic ostraca*, 13, pl. 43-43A no. 37

<sup>3</sup> Černý and Gardiner, *Hieratic ostraca*, 19, pl. 64-64A no. 3.

<sup>4</sup> Grandet, *Catalogue des ostraca hiératiques non littéraires de Deir el-Médîneh. Tome IX: N° 831-1000*, 2, 53, 274.

<sup>5</sup> Rob Demaree, *Ramesside Ostraca*, (London: British Museum Press, 2002), 18 and pl. 29; Černý and Gardiner, *Hieratic ostraca*, 23, pl. 87 no. 1.

<sup>6</sup> Janet Janssen, "The Year of the Strikes", BSEG 16, (1992), 45, 47; see also, the Deir el-Medina Database (wepwawet.nl).



Ramesses III in the form  $p3 \text{ } \text{ } n + \text{product}$  but in this case the product was copper.

- C) The third is  $p3 + mw + n + t3 \text{ } ri.t \dots$ <sup>1</sup>. The formula represents an account of water for one side of gang followed by the names. Sometimes it appears with the names directly as  $p3+ mw+ NN$ <sup>2</sup>.
- D) The fourth form is  $n3 \text{ } n \text{ } mw \text{ } rdy \text{ } r \text{ } bnr$ <sup>3</sup> appeared in O. Ashmolean Museum 0168 gave an account of the distribution of water “the water what is given to outside”. It may refer to the amount of water delivered from outside the village.
- E) The fifth form is  $di.t \text{ } mw \text{ } n \text{ } NN$ . The formula consists of  $di.t+$  product ( $mw$ ) + preposition  $n + NN$  to mean “giving (distribution of) water rations to NN”. This formula was commonly used in accounts of the distribution of grain rations with various forms<sup>4</sup>. This formula  $di.t+$ product appeared both at the beginning of the text and also included further down and was followed by a list of recipients of ration<sup>5</sup>.
- F) The sixth form  $rh.t \text{ } n \text{ } mw$  appeared in O. Ashmolean Mus. 0195<sup>6</sup> dated back to Ramesses II, it is about an account of water. This formula was used as a heading to mean “a list of water”, as the term  $rh.t+ n$  means “statement of or list of”<sup>7</sup>. This term is connected to the statistics process and helps in the completion of the inventory and statistics.
- G) The seventh formula  $iw \text{ } mw$  was used in O. Berlin P 14327, as it represented the heading on verso as follows  $3bd \text{ } 2 \text{ } prt \text{ } sw \text{ } 19 \text{ } iw \text{ } mw$ . The formula runs as  $date+ iw+$  product. The term  $iw$  means “delivered” and was used as an introduction to the list of water deliverers. This formula was frequently used with fish, wood and sometimes with water. This implied its connection with commodities that are delivered from outside the village<sup>8</sup>.
- H) The form  $mw \text{ } nty \text{ } m \text{ } wd3.t \text{ } hr \text{ } smhy$  appeared in O. DeM 60 ration list of and grain dated to Ramesses II<sup>9</sup>. This form was used as a title of the list and means “Amounts of water deficit on the left side” then it was followed by the workmen's list and the amount of deficit for each one of them and ended with the total water deficit

In other examples of water delivery and distribution lists<sup>10</sup>, these formulas were not included, and the word “water” was mentioned explicitly and in several quantities, such as: O. Michaelides 91<sup>11</sup> and O. DeM 876<sup>12</sup>. Also in other cases the percentages were

<sup>1</sup> O. Ashmolean Mus. 0161= Černý Notebook 45.64

<sup>2</sup> O. Qurna 621/2

<sup>3</sup> O. Ashmolean Mus. 0168= Černý Notebook 45.72

<sup>4</sup> Donker and Harring, *Writing in a workmen's village: scribal practice in Ramesside Deir El-Medina*, 136-139.

<sup>5</sup> O. Ashmolean Mus. 0212= Kenneth Kitchen, *Ramesside Inscriptions*, Volume I, (Oxford: B.H. Blackwell Ltd, 1989), 298, in this cases, Account of the days on which no water is delivered

<sup>6</sup> Kitchen, *Ramesside Inscriptions*, Volume I, 197.

<sup>7</sup> Wb, II, 448; Faulkner, *A Concise Dictionary of Middle Egyptian*, 152; Wb, 1434

<sup>8</sup> Mandeville, *Wage Accounting in Deir el-Medina*, 26.

<sup>9</sup> Jaroslav Černý, *Catalogue des Ostraca Hiératiques non Littéraires de Deir el Médineh N°1-113*, (Le Caire, Institut français d'archéologie orientale, 1935), 16, pl. 46-46 A.

<sup>10</sup> The water accounts are a very limited genre.

<sup>11</sup> Goedicke and Wente, *Ostraka Michaelides*, 22, pl. LXXX.

<sup>12</sup> Grandet, *Catalogue des ostraca hiératiques non littéraires de Deir el-Médinéh. Tome IX: N° 831-1000*, 2, 51-53, 272-273.

mentioned only without a reference to water, but through quantities, it is suggested that they were water rations, such as: O. Varille 34<sup>1</sup> and O. Berlin P 14668<sup>2</sup>.


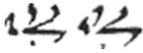
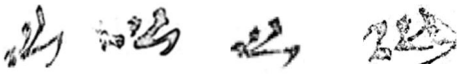


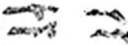


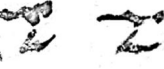









*Third: Wood*

Besides grain and water rations, the workmen regularly received other commodities like fish, vegetables, and wood as fuel. There are sources (O. DeM 147, O. DeM 150, O. DeM 151, O. DeM 152)<sup>3</sup> for what amount brought firewood. They are considered important sources in knowing the character of bringing the firewood. The four sources show that the firewood is recorded every 10th, 20th, 30th every month.

The ration of wood highly depends on the period and single deliverer. There is no average number attested. On the ostrakon under study perhaps it refers to the firewood requirements for one side of the gang where the total is 626 portions.

**Dating:**

According to the average of the workmen's rations that appear on the other sources, the water accounts in Deir el-Medina<sup>4</sup>, and the style of handwriting, this ostrakon has to be dated to first half of the 19th Dynasty, specially Ramesses II.

G/M	Wimmer <sup>5</sup>	O. Cairo JE72457
 G4+G1/ 221+192	 145	 R.1 R.2 R.5 V.6
 O29+Y1 +N.35/ 363+538 +331	 253	 R.4 R.5
 O34+A1/ 366+33	 256	 R.2 R.6
 R.14/579	 275	 v.2
 U.9/696	 300	 R.1 R.3 R.4
 U10+Z2/ 470B	 302	 R.5

**Table 1:** Signs list of O. Cairo JE72457.

<sup>1</sup> Unpublished; Černý Notebook 43.45

<sup>2</sup> O. Berlin P 14668

<sup>3</sup> Akiyama Shinichi, "The Supply of Wood to Deir el-Medineh", *Bulletin of the Society for Near Eastern Studies*, (1992): 71-82.

<sup>4</sup> Some sources dealing with water distribution date to the reign of Ramesses II such as: O. Ashmolean Mus. 195- O. Ashmolean Mus. 87- O. Ashmolean Mus. 116- O. Ashmolean Mus. 230- O. DeM189- O. DeM 328.

<sup>5</sup> Stefan Wimmer, *Hieratische Palaographie Der Nicht Literarischen Ostraka Der 19 und 20 Dynastie*, (Teil 2, Wiesbaden, Otto Harrassowitz Verlag, 1995).

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