

## V.

### GLASS, AS A MATERIAL FOR STANDARD COIN WEIGHTS.

So little is known respecting the so-called glass coins of the Mohammedans, which are variously alluded to as “vitrei numi,”<sup>1</sup> as “monnaies de verre,” and as “monnaies fictives,”<sup>2</sup> that I propose to lay before the Numismatic Society a full description of my collection of these relics—many of which are as yet unpublished—together with my reasons for believing that they were primarily designed as standard *weights for* coins, and that they were never intended to be used as *current* coins or *representative* pieces of money.

By the courtesy of its author, I have just received a copy of the article, which appeared in Vol. XII., p. 199, of the *Numismatic Chronicle*, on Arabic glass coins, by Mr. Stanley E. L. Poole, the perusal of which has induced me to revise my partially prepared article on this subject, in order that I may answer some of the arguments which he has brought forward in support of his theory that these vitreous *plaques* were ever issued or accepted as *coins*.

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<sup>1</sup> Numi Mohammedani by Pietraszewski, pp. 97 et seq., and Adler's Collectio numorum Cuficorum, pp. 151 et seq.

<sup>2</sup> L'Univers, Egypte Moderne, par J. J. Marcel, pp. 139 et seq., but the author does not give any authority for these appellations, simply taking it for granted that they were fictitious coins, and without assigning any sufficient reason.

It was my intention, before proceeding to the chief purpose of this article, to refer minutely to the origin of Mohammedan coinages. But having recently received the comprehensive work entitled "*Essai sur les systèmes métriques et monétaires des anciens peuples*," in which the learned author, Don V. Vazquez Queipo, has almost exhausted the subject, it remains for me merely to refer to his deductions in this particular direction. He has consulted generally the same authors that I have; but there are two valuable works of which he clearly had no knowledge, from which much additional information may be obtained. I refer to *Kitâb el Kâmil fi t-Tarikh* by Ibn el Athîr, and to *Kitâb Heyât el Heiwân* by Sheikh Kimal ed din ed demîri.

The Omeyyah Khalîfah Abd ul Malik ibn Merwân was the first to strike dînârs and dirhams of a purely Mohammedan type. The coins in use until his time in the Mohammedan dominions were Byzantine dînârs and Sassanian dirhams, on the latter of which certain Mohammedan formulæ were introduced. The Mohammedan rulers adopted the customs, weights, measures and coins of the people they had conquered, not being sufficiently settled at that early period to give their attention to the establishment of new institutions.<sup>3</sup>

The first dînârs and dirhams were made in the proportion of 7 to 10, the dînâr weighing 21·75 kirâts and the dirham 15. These weights have been variously rendered by modern numismatists, some give their equivalent values as  $21\cdot75 : 15 = 67 \text{ grs.} : 46\cdot2 \text{ grs.}$ <sup>4</sup> whilst Mr. S. Poole values them respectively at 65·5 grs. and 45·5 grs.<sup>5</sup>

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<sup>3</sup> Queipo, p. 18, vol. ii.

<sup>4</sup> Professor Maskelyne, note in Mr. Thomas' *Initial Coinage of Bengal*, p. 9.

<sup>5</sup> *Arabic Glass Coins*, page 201.

Most Arabic authors use the words *mithkâl* and *dînâr* so vaguely that the reader is often led to believe that the terms are synonymous. This however is an error. The word *mithkâl* مِثْقَال simply means "a weight," the weight of anything large or small, the weight of one object as compared with another, and conventionally, *the weight of 24 kirâts*. The word used alone ought not to be made to signify *dînâr*.

My collection of glass weights may be divided into four distinct categories. Firstly, thirty-six weights struck by the Fatimite Khalîfahs, and bearing their names. It is known that the size and weight of *dînârs* and *dirhams* were frequently changed by the reigning Khalîfah. It was therefore necessary that the name or date should appear on the standard coin weight, lest the merchant should inadvertently weigh a new coin by an old and obsolete standard.

Secondly, glass weights which present certain inscriptions, confirming the theory that they are weights. Of these I have four, and I think they are of much earlier date than the time of the Fatimite Khalîfahs. Indeed I think they must belong to the time of the Omayyah dynasty. I find in an article on "Die nominale der münzreform des Chalifen Abdulmelik," by Dr. E. von Bergmann, an allusion in note 1 to page 24, to two glass discs of this class, one bearing this inscription بِسْمِ اللَّهِ ضَرْبُ هَذِهِ النِّصْفِ سَنَةِ مِائَةٍ *In the name of God this half was struck in the year 100*. And the other bearing مِثْقَالُ نِصْفٍ وَافٍ *Weight of a half, full weight*. Its weight is given as 2.142 grammes, equal to about 33 grains.

Thirdly, glass weights of an evidently later period, bearing rude inscriptions and legends similar in character to those found on the coins of the Bahrit Mamlûke sovereigns of Egypt and Syria.

And fourthly, those on which there are devices, such as a rosette, a double triangle, without any inscription, and those which have neither device nor inscription.

### GLASS WEIGHTS BEARING THE NAMES OF THE FATIMITE KHALÎFAHS.

THE FOURTH FATIMITE. AL MO'IZ LEDIN ILLAH ABU TEMIM  
MO'AD.

1. Dark green, transparent; diameter 1.10 inch, weight 86 grs.

*Legend.*—*الامام معد ابو تميم المعز لدين الله* The Imâm Mo'ad  
Abu Temim Al Mo'iz ledin illah.

*Area.*—*امير المومنين* Emir ul mumenîn.

2. Pale green, transparent; diameter 0.40 in., weight 5.8 grs.

This disc does not appear to have been worn away, but it only represents a portion of the die. The inscription is simply *معد* Ma'ad with a portion of a word below it.

THE FIFTH FATIMITE. AL 'AZÎZ BILLAH.

3. Dirty white, transparent; diameter 0.68 × 0.56 in., weight 21.5 grains.

Inscription in two lines *العزیز بالله* Al 'Azîz billah.

4. Pale green, transparent; diameter 0.64 × 0.54 inch, weight 14.7 grains.

Within a dotted octagon, an inscription in four lines.

*الامام العزیز بالله امير المومنين*  
The Imâm al 'Azîz billah Emîr ul Mumenîn.

THE SIXTH FATIMITE. AL HÂKIM BIAMR ILLAH.

5. Pale green, transparent; diameter 1.04 inch, weight 65.5 grs.

Inscription in five lines. *الامام الحاكم بامر الله امير المومنين*

*مما عمل في سنة احدى واربع ميه عدل* The Imâm al  
Hâkim biamr illah Emîr ul mumenîn. Of what were  
made in the year four hundred and one. Justice (or just).



6. Pale green, transparent; diameter 1·04, 0·90 inch, weight 64 grains.

*Obverse*.—Inscription in six lines. **الامام الحاكم بامر الله امير المومنين مما عمل في سنة ثلث واربع ميه عدل** The Imâm el Hâkim biamr illah, Emîr ul mumenîn. Of what were made in the year four hundred and three. Just.

*Reverse*.—The Fatimite symbol in three lines.

7. Green, transparent; diameter 0·80 inch, weight 45·4 grains.

Inscription.—**الحاكم بامر الله**. Al Hâkim biamr illah.

8. Green, transparent; diameter 1 inch, weight 91 grains.

Inscription.—**الحاكم بامر الله**. Al Hâkim biamr illah.

9. Pale green, transparent; diameter 0·82 in., weight 37·7 grs.

*Obverse*.—Inscription in three lines.—

**الامام الحاكم بامر الله وولى عهده**

The Imâm al Hâkim biamr illah and his heir-apparent.

*Reverse*.—Three lines of inscription, illegible.

10. Pale green, transparent; diameter 1 inch, weight 90·5 grs.

In a dotted circle, inscription as in No. 9.

11. Pale green, transparent; diameter 0·86 in., weight 45·1 grs.

In a dotted circle, inscription as in No. 9.

12. Pale green, speckled with brown; diameter 0·66 in., weight 22·3 grains.

In a plain circle, the inscription.—**الامام الحاكم وولى عهده**.

The Imâm al Hâkim and his heir-apparent.

13. Pale green, transparent; diameter 0·86 in., weight 32·5 grs.

*Obverse*.—In a dotted circle, the same inscription as in No. 9.

*Reverse*.—The Fatimite symbol.

14. Pale green, transparent; diameter 1·04 in., weight 91·5 grs.

In a dotted circle, the inscription.—**الحاكم بامر الله**. Al Hâkim biamr illah.

15. Pale green, transparent; diameter 0·64 in., weight 22·8 grs.  
In a plain circle, the inscription.—الحاكم بامر الله. Al Hâkim biamr illah.

THE SEVENTH FATIMITE. ADH DHÂHIR LI'AZÂZ DÎN ILLAH.

16. Dark yellow, transparent; diameter 1·06 in., weight 91·6 grs.  
In a plain circle, the inscription in three lines.

الظاهر لاعزاز دين الله امير المؤمنين  
Adh Dhâhir li'azâz dîn illah, Emîr ul mumenîn.

17. Pale green, translucent; diameter 1 inch, weight 93 grains.  
In a plain circle, the inscription.—الامام الظاهر. The Imâm adh Dhâhir.

18. Dirty white, transparent; diameter 1 in., weight 77·5 grains.  
*Obverse*.—In a plain circle, three lines.

الامام الظاهر لاعزاز دين الله امير المؤمنين  
The Imâm adh Dhâhir li'azâz dîn illah, Emîr ul Mumenîn.

*Reverse*.—An inscription which is so much worn as to be illegible.

19. Pale green, transparent; diameter 0·30 inch, weight 23 grs.  
In a circle, the word.—الظاهر Adh Dhâhir, with an ornament above and below it, and four prominent dots.

20. Pale green, transparent; diameter 0·84 in., weight 45·7 grs.  
In a dotted circle the same inscription as in No. 18 and a dot above and one below.

21. Green, transparent; diameter 1·0 inch, weight 58·5 grains.  
*Obverse*.—Legend, the first general symbol. Area, same as in No. 18.

*Reverse*.—An inscription which is defaced and illegible.

THE EIGHTH FATIMITE. AL MOSTANSIR BILLAH.

22. Yellow, with a tinge of green, transparent, diameter 1·02 × 0·85 in., weight 46·8 grains.

*Legend*.—الامام معد ابوتميم المستنصر بالله امير  
The Imâm Mo'ad Abû Temîm al Mostansir billah, Emîr\*.  
*Area*.—المومنين. Ul Mumenîn.

23. White, with a tinge of pink, transparent; diameter 0·85 in., weight 46·3 grains.

In three horizontal lines, beginning with the lowest and reading upwards.—*الامام المستنصر بالله*. The Imâm al Mostansir billah.

24. Rich blue, transparent; diameter 0·90 in., weight 44·7 grs.

*Legend*.—*الامام معد ابو تميم المستنصر بالله*. The Imâm Mo'ad Abû Temîm, Al Mostansir billah.

*Area*.—*امير المومنين*. Emîr ul Mumenîn.

25. Pale tinge of green, transparent; diameter 1·22 in., weight 131·2 grains.

Legend and area as in No. 24.

26. Dirty white, transparent; diameter 0·90 in., weight 46·8 grs.

In three horizontal lines, the legend and area of No. 24.

27. Green, speckled with brown; diameter 1·32 inch, weight 130·2 grains.

Legend and area as in No. 24.

28. Pale green, transparent; diameter 0·94 in., weight 46·8 grs.

In four horizontal lines, the same inscription as in No. 22.

29. Pale green, transparent; diameter 0·92 in., weight 46·3 grs.

Legend and inscription as in No. 24.

30. Green, transparent; diameter 0·98 inch, weight 42·3 grains.

Legend and inscription as in No. 24.

#### THE NINTH FATIMITE. AL MOSTA'ALA BILLAH.

31. Green, transparent; diameter 0·95 inch, weight 45·7 grains.

Inscription in three lines.

*الامام احمد المستعلى بالله امير المومنين*

The Imâm Ahmed al Mosta'ala billah Emîr al Mumenîn.

32. Green, transparent; diameter 0·84 inch, weight 46 grains.

*Inscription*.—*الامام احمد*. The Imâm Ahmed; beneath which is a word which may be *المستعلى* Al Mosta'ala, but it is not easy to decipher it positively.

33. Green, transparent; diameter  $0.98 \times 0.82$  in., weight 48 grs.

*Area.*—الامام أحمد. Al Imâm Ahmed. Legend illegible.

34. Pale green, transparent; diameter 1.02 in., weight 57.8 grs.

Inscription in four lines.—أحمد الامام أبو القاسم المستعلي . بالله امير المؤمنين  
Ahmed the Imâm abû-l Kâsim al  
Mosta'ala billah, Emîr al Mumenîn.

THE TENTH FATIMITE. AL AMIR BI AHKÂM ILLAH.

35. Dark green, transparent; diameter 1.06 in., weight 92.1 grs.

Legend.—الامر باحكام الله. Al Amir bi ahkâm illah.

*Area.*—Illegible.

THE ELEVENTH FATIMITE. AL HAFIZ LEDÎN ILLAH.

36. Turquoise blue, opaque; diameter 0.54 in., weight 15.3 grs.

Only a portion of the original die appears on this disc, in three imperfect lines,—... الله امير المؤمنين ...  
Al Imâm Al Hâfiz ledîn illah, Emîr ul Mumenîn.

We now come to the second series of glass weights.

37. Transparent green; diameter  $1.32 \times 1.26$  in., weight 90 grs.

Within a plain circle, in bold simple characters, apparently of very early date, an inscription in seven lines, which I read thus—بسم الله مما امر به القاسم بن عبيد الله—

مقال فش الدين ثلثين خروبه ا ن ف

In the name of God. Of those which Al Kâsim son of 'Obeid Allah ordered.

The weight in dinâr-kharûbs of thirty kharûb seeds, after which are three signs. Pl. II., Fig. 1.

In this specimen, which, it must certainly be admitted, is a weight, and not a coin, I was at first much puzzled by the last word in the fourth line. I tried to read it *fels*, but there are only three "teeth" after the first letter; and eventually I thought it might be read فاش *fash*, which according to the Kamûs is a kind of Kharûb tree, and is explained by Kazimirski as *Ceratonia siliqua*, and is probably the species of Kharûb tree whose seeds are



specially selected for weighing gold and silver. The seeds of other Kharûb trees may be larger or smaller, whilst these are a fraction more than three grains each. I think we may put them down at 3·03, and that that is also the weight of the kirât seems almost obvious. This reading I submit to those who take an interest in this subject, and am quite open to conviction, should a more satisfactory interpretation be suggested.

This disc in its present state weighs exactly 90 grains. A small piece has been broken from the rim, which will perhaps allow for it to have weighed originally 91 grains or two dirhams of 45·5 each.

38. Pale green, transparent; diameter 1 inch, weight 38·6 grs.

In a square field four lines.—بسم الله مثقال درهم وزن ثلاث. عشرة خروبه. In the name of God, dirham weight, weight of thirteen kharûbs. The characters on this weight are very similar to those on the preceding one, No. 37. It has been slightly injured on the reverse side, where there is an illegible inscription. If the kharûb seed be taken at 3·03 grains, this disc must have weighed originally 39·39 or in round numbers 39·4 grs. Pl. II., Fig. 2.

39. Rich blue, transparent; diameter 0·88 in., weight 32·5 grs.

In the area is a star with eight rays and eight dots. Pl. II., Fig. 3.

*Legend.*—بسم الله مثقال نصف دينر. In the name of God, the weight of half a dînâr.

On the reverse is an inscription partially defaced, which I can partly read thus: على يدى صالح بن سيف. By the hands of Salih ibn . . .

In these three glass discs the word *mithkal* is used almost synonymously with *wasn* وزن to mean a weight.


40. Pale green, transparent; a fragment of about half a disc. It has the remnant of an inscription with—

سبعة وعشرين خروبه. Twenty-seven Kharûb seeds.

41. Very dark green, transparent; a mere fragment, represented in Pl. II., Fig. 4. The segment represents a circle of the diameter of 2·18 inches, thickness 0·34 inch. This would certainly be a very inconvenient size for a coin.

42. Very dark green, transparent; a fragment.
43. Green, transparent; weight 64·5 grains.  
Inscription almost obliterated, the word الله God alone being legible.
44. Dark green, transparent; diameter 1·12 in., weight 84·4 grs.  
Inscription almost obliterated.
45. Pale green, transparent; diameter 0·6 inch, weight 14·8 grs.  
Illegible inscriptions on both sides.
46. Pale green, transparent; diameter 1 inch, weight 61·1 grs.  
Illegible inscription.
47. Green, transparent; diameter 1·16 inch, weight 221 grains.  
A square stamp on the face which cannot be deciphered.  
This weight is 0·46 inch in thickness.
48. Pale green, transparent; diameter 1·06 in., weight 90·5 grs.  
Two legends and an area in Fatimite style; illegible.
49. Very pale green, transparent; diameter 1·06 inch, weight 85·8 grains.  
Fatimite legend and area; illegible.
50. Pink, transparent; diameter 1 inch, weight 88·6 grains.  
Fatimite legend and area; illegible.
51. Very pale green, opaque; diameter 0·80 in., weight 46 grs.  
Fatimite legend and area; illegible.
52. Green, transparent; diameter 1 inch, weight 65·5 grains.  
Fatimite inscription and legend; illegible.
53. Very dark green, translucent; diameter 0·94 in., wt. 42 grs.  
Fatimite area and legend; obliterated.
54. Green, transparent; diameter 1·02 inch, weight 91·5 grains.  
Fatimite area and legend; illegible.
55. Pale pink, transparent; diameter 0·84 inch, weight 38·2 grs.  
Fatimite area and legend; illegible.

56. Green, transparent; diameter 1 inch, weight 70·8 grains.  
*Obverse*.—In a dotted circle, an inscription much abraded.  
*Reverse*.—Part of the Fatimite symbol, much defaced.
57. Green, transparent; diameter 1·06 inch, weight 80 grains.  
 Fatimite inscription; illegible.
58. Pale green, transparent; diameter 0·64 in., weight 18·8 grs.  
 A Fatimite inscription illegible.  
 On the reverse, a part of the Fatimite symbol legible.
59. Pale green, transparent; diameter 0·64 in., weight 22·5 grs.  
 Fatimite inscription, illegible.
60. Pale turquoise colour, opaque; diameter 0·54 in., weight  
 15·2 grains.  
 Imperfect impression—عهد الله, a scroll beneath.
61. Dark green, transparent; diameter 1·06 in., weight 92·8 grs.  
 Legend and area, illegible.
62. White with a tinge of yellow, transparent; diameter 0·94 in.,  
 weight 91 grains.  
 Inscription illegible.
63. Pale yellow, transparent; diameter 0·90 in., weight 66·7 grs.  
 Inscription in area, and legend, illegible. Of the Mamluke  
 style of characters.
64. Pale green, variegated with blue, transparent; diameter  
 0·90 inch, weight 48·3 grains.  
 Inscription in area, and legend in Mamluke style; illegible.
65. Pale green, transparent; diameter 0·80 inch, weight 45 grs.  
 Inscription illegible.
66. White, opaque; diameter 1 inch, weight 91·7 grains.  
 Inscription illegible.
67. Pink, transparent; diameter 0·84 inch, weight 45·7 grains.  
 Inscription illegible.
68. Turquoise blue, translucent; diameter 1 in., weight 88·2 grs.  
 Inscription in three lines illegible.

69. Dark crimson, opaque ; diameter 1 inch, weight 92·4 grains.  
Inscription in Mamluke style, illegible.
70. Dark green with blue patches ; diameter 1·06 inch, weight 89·2 grains.  
Inscription unintelligible.
71. White with brown speckles, opaque ; diameter 0·92 inch, weight 90·2 grains.  
Unintelligible inscription.
72. Rich ultramarine blue, with white streaks ; diameter 1 inch, weight 92·4 grains.  
In the centre is the word  Mohammed, legend illegible.
73. White, with a pale blue patch, transparent ; diameter 1·02 inch, weight 93·4 grains.  
Inscription illegible.
74. Greenish white, with a pink patch, transparent ; diameter 1 inch, weight 92 grains.  
Inscription illegible.
75. Brownish pink, transparent ; diameter 0·90 inch, weight 46·2 grains.  
This specimen is in a good state of preservation, but I cannot decipher a word of the inscription.
76. Very dark crimson, translucent ; diameter 0·96 inch, weight 83·4 grains.  
Illegible inscription.
77. Rich crimson, transparent ; diameter 0·98 in., weight 89·0 grs.  
Illegible inscription.
78. Rich dark crimson, opaque, with a white opaque patch ; diameter 1·08 inch, weight 93·4 grains.  
Inscription illegible.
79. Brown, opaque ; diameter 1 inch, weight 89·8 grains. .  
An illegible inscription.
80. Yellowish green, with brown specks, transparent ; diameter 0·82 inch, weight 48 grains.  
Illegible inscription.



81. Brownish pink, transparent; diameter 0·90 in., weight 60·3 grs.  
In bold characters. **بسم الله** In the name of God.

82. Dark carmine, opaque; diameter 1 inch, weight 90 grains.  
In bold characters of more modern style. **أحمد سنة أربعين**  
Ahmed the year Forty. The century is not given, but I think this weight must have been struck in about the sixth or seventh century of the Hijreh. See Pl. II., Fig. 5.

83. Pale pink, transparent; diameter 0·86 in., weight 46·1 grs.  
In characters similar to those on No. 82. **العودى سنة خمسين**  
Al 'Aûdy, the year fifty.

84. Dark crimson, opaque; diameter 0·94 inch, weight 88·4 grs.  
In characters similar to those on No. 82.

**رسم الحسن عمل العودى**

The design of al Hassan, the work of Al 'Aûdy.

85. Pink, transparent; diameter 1 inch, weight 93·5 grains.  
**العودى** Al 'Aûdy.

86. Pale pink, transparent; diameter 0·84 inch, weight 45·4 grs.  
**يعقوب سنة عشر . . . . .** Yâkûb the year ten. There is a word above which I cannot decipher.

87. Greenish white, with blue patches; diameter 1 inch, weight 92·8 grains.

**محمد بن شاهين سنة أربع وعشرين** Mohammed, son of Shahîn, the year twenty-four.

88. Rich ultramarine blue, translucent; diameter 1 inch, weight 93·2 grains.

**محمد بن شاهين سنة ست عشر** Mohammed, son of Shahîn, the year sixteen.

89. Pale pink, transparent; diameter 0·96 inch, weight 66·4 grs.  
**السيد على** Es seyid 'Ali.\*

90. Pale pink, with a blue patch; diameter 0·84 inch, weight 47·2 grains.

Inscription as in No. 89.

91. Rich yellow, translucent; diameter 1 inch, weight 92 grains.

عمل حسن The work of Hassan.

92. Green, transparent; diameter 0·80 inch, weight 28·8 grains.

Illegible inscription.

93. Dark brown, opaque; diameter 0·72 × 0·62 in., weight 23·8 grs.

Illegible inscription.

94. Turquoise blue, opaque; diameter 1·00 × 0·90 inch; weight 89·5 grains.

عمل عمر The work of Omar (?). I am not quite confident of the correctness of this reading.

95. Dark yellow, translucent; diameter 1 inch, weight 89·7 grs.

Illegible inscription.

96. Pale pink, transparent; diameter 1·08 × 1 inch, weight 91·5 grains.

Illegible inscription.

97. Very dark crimson, opaque; diameter 1 inch, weight 92 grs.

Illegible inscription.

98. Milky white, with a blue patch, translucent; diameter 1 inch, weight 93·6 grains. Unintelligible inscription.

99. Very dark crimson, opaque; diameter 0·76 in., weight 46 grs.

Illegible inscription.

100. Blue, translucent; diameter 0·86 inch, weight 49·8 grains.

Illegible inscription.

101. Pale green, with a patch of blue, transparent; diameter 1 inch, weight 92·9 grains. Illegible inscription.

102. Dark yellow, translucent; diameter 1 inch, weight 81·9 grs.

Illegible inscription.

103. Greenish white, opaque; diameter 0·96 in., weight 93·8 grs.

Illegible inscription.

104. Very dark yellow, opaque; diameter 1 inch, weight 93·3 grs.

Illegible inscription.

105. Very dark crimson, opaque; diameter 0·96 inch, weight 89·8 grains.

عمل عمر The work of 'Omar.

106. Very pale green, transparent; diameter 1 in., weight 92·6 grs.

الإمام . . . . بالله The Imâm (probably Al Mostansir) billah.

107. Pink, transparent; diameter 1·08 × 1·00 in., weight 89·7 grs.  
Inscription illegible.

108. Dark carmine, translucent; diameter 1 in., weight 90·5 grs.  
Inscription illegible.

109. Yellow, transparent; diameter 0·64 inch, weight 22·9 grs.  
Inscription illegible.

110. Brown, translucent; diameter 1 inch, weight 93·9 grains.  
Inscription illegible.

111. Dark crimson, opaque; diameter 0·96 × 1·04 inch, weight 81 grains.  
Inscription illegible.

112. Black, opaque; a fragment.  
علي 'Ali.

113. Pale green, transparent; diameter 0·48 in., weight 13·4 grs.  
On this little disc there is an elongated letter with three dots above it ا.

114. Very dark green, opaque; diameter 1 inch, weight 92 grains.  
A *fleur de lys* and عمل عمر 'Omar. See Pl. II., Fig. 6.

115. Very dark crimson, opaque; diameter 1 in., weight 89·5 grs.  
A *fleur de lys* and عمل عمر 'Omar, as in No. 114.

116. Very dark crimson, opaque; diameter 0·96 in., weight 92·8 grs.  
A rosette with six leaves. See Pl. II., Fig. 7.

117. Green, transparent; diameter 0·76 inch, weight 44·2 grains.  
A rosette with eight leaves. See Pl. II., Fig. 8.

118. Greenish white, opaque ; diameter 1 inch, weight 85·2 grains.  
A double triangle which is called by the Arabs "Solomon's seal." See Pl. II., Fig. 9.
119. Very dark crimson, opaque ; diameter 1 inch, weight 86·6 grs.  
A double triangle, like the preceding, with a dot in the centre.
120. Very dark crimson, opaque ; diameter 0·96 in., weight 90·2 grains.  
A double triangle with an illegible word in the centre.
121. Very dark crimson, opaque ; diameter 1 inch, weight 82·8 grs.  
A double triangle with a dot in the centre.
122. Crimson, translucent ; diameter 0·84 inch, weight 44·8 grs.  
A double triangle with a dot in the centre.
123. Dark crimson, opaque ; diameter 1 inch, weight 89·4 grains.  
A double triangle with a circlet in the centre.
124. Crimson, with a patch of white, opaque ; diameter 0·94 inch, weight 45·8 grains.  
A double triangle.
125. Yellow, transparent ; diameter 1·10 inch, weight 94 grains.  
A double triangle made of wavy foliated lines, with a circlet in the centre, and a letter within the circlet.
126. Greenish yellow, transparent ; diameter 1·07 inch, weight 92·2 grains. Like No. 125.
127. Deep crimson, opaque ; diameter 1 inch, weight 89·5 grains.  
Like No. 125.
128. Turquoise blue, opaque ; diameter 1·00 × 0·90 inch, weight 91·8 grains.  
A smooth circular area without inscription.
129. Clear crystal, a fragment, wavy lines on each side.
130. Greenish white, transparent ; diameter 0·74 inch, weight 45·2 grains.  
No inscription, a hole through the centre.



131. Greenish white, transparent, diameter 0·76 in., weight 35·8 grains.

No inscription, a hole through the centre.

132. White, opaque, diameter 0·80 inch, weight 46·0 grains.

الله  
الامام  
الناصر  
لدين

Al Imâm an Nâsir ledîn illah.

133. Greenish white, translucent; 0·98 inch, weight 90·1 grains.  
Same inscription as in No. 132.

134. Greenish yellow, transparent; diameter 1·08 inch, weight 69 grains.

A Greek monogram. See Pl. II., Fig. 10.

135. Variegated blue and white, transparent; diameter 0·80 inch, weight 34·5 grains.

A Greek monogram. See Pl. II., Fig. 11.

The following glass discs belong to my friend Mr. H. Sauvaire, who has kindly lent them to me, with permission to publish a description of them.

- 1 s. Green, transparent; diameter 0·80 in., weight 21·8 grains.

In an area, extending quite to the edge of the disc on one quarter of its circumference, and leaving a very narrow margin at the other three quarters, is an inscription in seven lines, in characters very similar to those found upon my No. 35, this emanating evidently from the same manufactory and under the auspices of the same Kâsim son of 'Obeid Allah.—

امرالله بالوفاء وامره بطبعه مثقال  
ثلث القاسم بن عبيدالله على يدى . . بن سيف سنة عشرة

God ordered full weight (or full payment) and al Kâsim son of 'Obeid Allah ordered the stamping of it, the weight of a third, by the hands of . . . son of Seif? the year ten.

The last two words are rather indistinct, consequently I am

not quite confident of my reading. The weight is that of a third of 65·4 grains. The word مقال I have read Mithkâl in the belief that it is a clerical error for مثقال. The disc is in excellent preservation, and I believe it retains its full original weight.

- 2 s. Pale green, a fragment; واف Full weight, and beneath that word a geometrical figure of five angles.
- 3 s. Pale green, transparent; diameter 0·64 inch, wt. 20·9 grs.  
In two lines.—الحاكم بامر الله. Al Hâkim biamr illah.
- 4 s. Pale green, transparent; diameter 1·04 × 1 in., wt. 53·3 grs.  
This disc has two legends which are illegible. In the area I read—الملك لله. To God belongs all. It is oxidized so as to present the appearance of having been silvered or gilt.
- 5 s. Green, transparent; diameter 1·08 in., weight 91·7 grains.  
*Obverse*.—Within a dotted circle, two horizontal lines.—الحاكم بامر الله وولي عهده. Al Hâkim biamr illah, and his heir-apparent.  
*Reverse*.—The Fatimite symbol.
- 6 s. Dark green, transparent; diameter 0·88 × 0·72 inch, weight 44·8 grains.  
Within a dotted circle.—الامام لنزار. The Imâm en Nazâr.  
This is the name of the Fatimite Khalîfah Al 'Azîz billah.
- 7 s. Green, transparent; diameter 0·74 in., weight 83·1 grains.  
Inscription.—بسم الله. In the name of God.
- 8 s. Dirty white; diameter 0·96 inch, weight 91·6 grains.  
A double triangle.

The following discs belong to the Rev. Greville Chester, who kindly placed them in my hands for the purpose of illustrating this subject.

- 1 c. A disc of baked clay covered with turquoise blue glaze ; diameter 1·08 inch, weight 226·4 grains.

The weight of five dirhams at 45·5 grains would be 227·5, which was probably the original weight of this disc ; the glaze has been chipped off in several places, thus exposing the white clay beneath it.

- 2 c. A disc of turquoise blue colour, opaque ; diameter 0·48 in., weight 14·8 grains.

This is very similar to my No. 36, but presents more of the original die than mine. The inscription is just as I had read it on my own specimen.

- 3 c. Pale green, speckled with brown ; diameter 1 inch, weight 92 grains.

A double triangle ; an illegible inscription in the centre.

- 4 c. Very pale green, with a patch of reddish brown on one side ; diameter 0·80 inch, weight 44·5 grains.

Inscription admitting of several readings.

- 5 c. Clear, with a slight pink tinge ; diameter 0·80 in., weight 47·3 grains.

Centre—أحمد. Ahmed. Legend in which appears the words—سنة عشرين. The year twenty.

- 6 c. Brownish pink, translucent ; diameter 0·66 × 0·59 inch, weight 23·1 grains.

A sort of lattice work of crossbars on the circular field.

- 7 c. Clear with a pinkish tinge ; diameter 0·66 in., wt. 17·6 grs.

I look upon this as a very curious specimen. It represents a vase in the centre, and is surrounded by a legend which I am unable to decipher ; I am inclined to believe it is not Arabic.

- 8 c. Pale blue, transparent ; diameter 0·54 × 0·48 inch, weight 10·9 grains.

Inscription—الامام معد. The Imâm Mo'ad.

9 c. Pale green, transparent; diameter  $0.74 \times 0.68$  inch, weight 38.6 grains.

On one side a bearded face looking to the right.

On the other side half length figure with wings.

This is probably of Greek manufacture.

There are also two glass discs which at first sight might be mistaken for weights of the same class as No. 9 c.; but on further examination of them they are found to be broken on the top edge, as though they had been originally cast as pendants.

The larger of the two represents an animal suckling two small creatures, which I think represent Romulus and Remus. Above the she-wolf are a star and crescent.

The other specimen represents a lion *passant* surmounted by a star and crescent.

These two discs are both of a brownish yellow colour, and transparent.

In the three collections here above described it will be seen that the weights of the majority of the discs correspond very closely with the recognised weights of *dînârs* and of *dirhams*, of their multiples and subdivisions. Those which do not so correspond are in some instances badly preserved specimens, having suffered abrasion from some cause; whilst others are probably the representatives of altered standard weights. The two specimens of Greek weights are well preserved, and represent so accurately the weights of the *solidus* and half *solidus*, that I think there can be no doubt as to their use; and if we find certain slight discrepancies in the Mohammedan weights, we must take into consideration the rather unsettled state of the Mohammedan empire, and must not expect in Arabic weights to find quite the same accuracy that we meet with amongst those of the more civilised Greek nation.





session, which are represented in Pl. II., Fig. 10 and Fig. 11. They are respectively of the exact weight of a solidus and a half solidus. These discs are in a very perfect state of preservation, and I am inclined to believe that they were standard weights used by merchants and dealers, not for weighing their wares, but for weighing the coins which were received or paid by them.

I believe that weights of this description were in use amongst the Greeks, and even amongst the Mohammedans, so long as Greek coins were current; that when the Khalîfah Abd ul Malik had made coins of a purely Mohammedan type, he, or perhaps some subsequent Khalîfah, was induced to copy the Greek custom of making glass weights for the purpose of testing the weight of the current coins.

Metal weights, moreover, were not always rings or blocks. The Rev. Greville Chester has shown me a number of old Byzantine weights, which are circular discs of bronze, of different sizes.

For many years I have carefully examined numerous Arabic histories, in the hope of finding some allusion to the use of glass by the Mohammedans as a material of which coins or weights were made at some period of their history. It is only recently that I have found what I have been so long seeking.

When in A.H. 75 or 76 the Byzantine Emperor sent to the Khalîfah Abd el Malik ibn Merwan, threatening that he would cause dînârs to be engraved with inscriptions insulting the name of the Prophet Mohammed, the Khalîfah was greatly perplexed, and he summoned the chiefs and nobles of the people to advise him how to act. None gave him any satisfactory advice, until Mohammed, son of 'Ali, son of Hussein, spoke as follows: "You shall immediately call the workmen and order them to make dies for dînârs

and dirhams, putting on one side of them the Chapter of the Unity, and on the other side the Mission<sup>\*</sup> of the Prophet. Place on the margin of every dirham and dînâr the name of the town and year in which it is struck. Determine the weight of thirty dirhams of the different kinds, take ten whose weight shall be ten mithkâls, ten whose weight shall be six mithkâls, and ten whose weight shall be five mithkâls. The united weights of these thirty dirhams is twenty-one mithkâls. This you will divide by thirty, and the result will be that every ten dirhams should be equal to seven mithkâls. And you shall cast weights of glass, which cannot alter either by increase or by decrease, and you shall make the dînârs to the weight of ten mithkâls, and the dirhams to the weight of seven mithkâls. The dirhams, in those days, were the Kesrawîyeh, which are now called Baghalîyeh, because Ras el Baghl coined them for 'Omar, with the die of Chosroes, in the days of Islam. There is engraved on them the portrait of the king, below the throne is written in Persian نوش خور, which means 'eat with health.' Their weight before the Mohammedan era was a mithkâl. The dirhams, of which ten were of the weight of six mithkâls, and those of which ten weighed five mithkâls, were called the Sâmariyeh. Of both light and heavy the inscription was Persian."<sup>6</sup>

Notwithstanding a passing doubt as to the entire accuracy of this narrative, we cannot help being struck by this allusion to glass weights. I have translated the entire passage, firstly, that it may be the better understood; and,

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<sup>6</sup> See Hayât ul Heiwân, vol. i. page 80; the original mention of the glass weights is in these words—وتصب صانجات من قوارير لاتستميل الى زياده ولانقصان.



secondly, because M. Queipo states that the dirhams, ten of which were equal to five mithkâls, are not mentioned by any Arabic author; and he assumes that D'Herbelot made his calculation, and that he arrived at the result that such dirhams must have existed.<sup>7</sup>

It must be borne in mind that Demîri wrote this book, *Hayât el Heiwân*, in A.H. 773, more than seven hundred years after the time at which it is stated that Mohammad, son of Hussein, gave such important advice to Abd el Malik. The striking of purely Mohammedan coins only began in the year 76, and was gradually developed into its subsequent importance. We cannot therefore believe that all the advice attributed by Demîri to Mohammad ibn Hussein was really given by him at first, and before any coins were struck. We must consider that the place of the mintage being found, together with the date on dînârs and dirhams of a later period, and glass weights being at that subsequent date used for weighing them, the author of *Hayât el Heiwân*, or the author from whom he quotes, assumed that even these subsequent improvements and developments were originally suggested by the same Mohammad ibn Hussein, who probably merely advised the Khalîfah to abolish the foreign coinage, and to strike dînârs and dirhams of purely Mohammedan type, in order to circumvent the Greek Emperor who had threatened to coin dînârs containing derisive epithets as applied to the Prophet Mohammed. But at any rate I look upon the allusion to glass coin weights as a confirmation of my theory that these discs were not intended for current coins.

Moreover, Ibn ul Athîr mentions special weights for

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<sup>7</sup> See *Essai sur les systèmes métriques et Monétaires*, vol. ii. page 130.



testing the weights of dirhams and dînârs, but does not state of what material they were made.<sup>8</sup>

In reply to Mr. S. Poole's second argument, I cannot see that glass is an inconvenient material for coin weights. Glass does not corrode, if simply the most ordinary care be bestowed upon it. A glass weight could not be reduced in size or in weight without easy detection. An accidental fracture would at once be noticed. And I think that glass would be much more inconvenient a material as applied to current coin than as applied to coin weights. Would not a disc such as No. 39, Fig. 4, be a very awkward coin? As a weight it remains in a box or a drawer with the scales, and is the representative of the weight of a certain known number of dînârs or dirhams.

Thirdly, "It is clear that the point that would *almost* settle this question is the weight of each glass disc." Mr. S. Poole does not inform us how many discs are in the collections to which he alludes. In my collection I have 135. I have had the advantage of examining M. Sauvaire's collection, consisting of eight; and the Rev. Greville Chester's recent acquisitions, to the number of nine. I have weighed each one very carefully in scales made for me in London, and verified on scientific principles by Messrs. Young and Son, of Cranbourne Street, Leicester Square. I have given without reserve the exact weight of every disc that has come under my notice, only omitting the weights of fragments, from which evidently no argument could possibly be deduced.

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<sup>8</sup> Al Kamil fi t tarîkh, vol. iv. page 337. وكان الناس لا يفرقون  
الوزن انما يزنون بعضها ببعض فلما وضع لهم سمير السنج كَفَّ  
بعضهم عن غبن بعض

At first sight these glass discs seem to agree almost exactly with the weight of dirhams and dînârs, their multiples and their subdivisions; but on closer examination we find many which weigh intermediate numbers of grains, corresponding with no proportion of either dirham or dînâr as at present calculated.

It certainly would be ridiculous to weigh with 19 grains instead of 16·3 grains, as Mr. S. Poole remarks; but this *reductio ad absurdum* is hardly to the point. For, firstly, we do not know exactly what the piece now weighing nineteen grains originally represented. We cannot tell by *how* much it may have been reduced in weight by friction in the sand or by the accidental application of acids; nor, in the second place, do we know at what exact period the said disc was cast. We know that the weights of dînârs and dirhams were frequently changed and modified by various Mohammedan rulers. Abd ul Malik first made them at the rate of 21·75 kîrâts to the dînâr and 15 kîrâts to the dirham.<sup>9</sup> Ibn el Abbas reduced the weight of the dirham to 14·75 and afterwards to 14·50 kîrâts.<sup>10</sup> Under Harûn er Rashîd the dirham weighed 14·25 kîrâts; and in A.H. 184 it was temporarily reduced to 10·55.<sup>11</sup> The glass coin weights, which we cannot exactly identify, may have been cast at either of these periods of altered standards; for I repeat that I never supposed these discs to have been destined for the weighing of wares, but only for the weighing of dirhams and dînârs, their multiples and subdivisions.

Fourthly, as to the argument that the largest number of

<sup>9</sup> Essai sur les systèmes métriques et monétaires, vol. ii. p. 145.

<sup>10</sup> Idem, vol. ii. page 160.

<sup>11</sup> Idem, vol. ii. page 161.

glass discs issued by one ruler were those issued by the eighth Fatimite Khalîfah Al Mustansir billah, I cannot admit this as a "fact." It is not so recorded in history. Mr. Poole has accidentally found the name of that Khalîfah repeated more often than any other on the discs that have come under his notice; but I must take the opportunity of stating that in my collection—and this consists of all that I have been able to obtain during many years past, having purchased without reserve all that have been offered to me—the palm must be yielded by the 8th to the 6th Fatimite Khalîfah. Of the Fatimite glass discs that I have deciphered,

2 belong to the 4th Khalîfah				
2	„	„	5th	„
11	„	„	6th	„
6	„	„	7th	„
9	„	„	8th	„
4	„	„	9th	„
1	„	„	10th	„
1	„	„	11th	„

I do not consider that the introduction of the name of the town Al Mansûrîyeh, in which a certain glass disc was cast, is any proof that it was a coin rather than a weight. Al Mansûrîyeh was for a long time a most important capital, and the name of that place would give a sort of guarantee that the disc was cast under Government auspices and of the required size or weight.

We now come to the description of two discs by Mr. S. Poole, and with all deference I must object to his translation of the words ميزان دينار. The words really mean literally *the weight of a dînâr*, not the "equal of a dînâr," the word ميزان having its root in the word وزن.

I think that the scarcity of glass discs is another collateral proof that they were not used as coins. Glass does not

actually perish by being buried. The action of fire or of certain acids would alone injure it. Were these discs the representatives of the countervalue of current coins, hoards of them would doubtless have been found, just as hoards of gold, silver, and copper coins are often found. These discs, however, have never been found in hoards. I have for many years past purchased them one or two at a time from shopkeepers in the druggists' and other bazaars in the East. Moreover, a fact worthy of remark, though not of itself a proof either one way or another, is that both the Rev. Greville Chester and myself have found these discs almost invariably in the little boxes or drawers in which the shopkeeper kept his other weights and scales.

The conservatism of Orientals is well known, and it is my belief that these glass coin weights have been handed down from father to son, from generation to generation, and passed on to each succeeding occupier of the shop, with its trade, weights, and scales, and that they have been intuitively retained by their recent owners long after their critical usefulness had passed away.

I have not replied to Mr. S. Poole in any spirit of contention. But I have found certain data which had escaped his observation, and I have sought to lay those data and my deductions from them before the readers of this Journal in the simple cause of numismatic science. Equally I trust I have not overstepped the legitimate limits of controversy, in the foregoing arguments, in support of my theory that these extant glass discs were once *STANDARD coin weights*.

E. T. ROGERS,

*H.B.M. Consul.*

CAIRO, Jan. 8, 1873.

P.S. Since I wrote the foregoing article, I have discovered that larger discs and blocks of glass were made by the Mohammedans, which were probably used for weighing



either large numbers of coins or perhaps the wares in the shops. One in the National Collection at Paris has an Arabic inscription, and the word رطل *rotl*. One in the Slade collection in the British Museum may be referred to as a weight. And lastly a disc just discovered by my friend M. Sauvaire has the words نصف وقية *half ounce* in very bold Kufic characters. This weight is of dark greenish yellow glass, and is translucent; but the surface presents a variety of colours, such as are often found on specimens of old glass after having been buried for a long time. Its present weight is 235·5 grains. The wūkîyeh or ounce in use in the present day in Egypt is 576 English grains, making the half wūkîyeh 228 grains.

E. T. ROGERS.

CAIRO, Jan. 22, 1873.



F. J. Lewis

# ARABIC GLASS COINS.