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## TWO EARLY ARABIC GLASS WEIGHTS

JAMES KRITZECK  
University of Notre Dame  
Notre Dame, Indiana

When two small glass objects of rather similar size and appearance were uncovered during the 1974 Campaign at Tell Hesbân, it was justifiably assumed, from the contexts of their discovery, that they could be regarded as relatively minor finds, and that they would hold no special mysteries for scholars of such objects.<sup>1</sup> Indeed, it was reported, "Two beautiful glass seal impressions came from Umayyad contexts . . . Each contains a short inscription in early Arabic script."<sup>2</sup>

From the very beginning of their more careful scrutiny, however, a perplexing set of problems and a wide variety of alternative and plausible solutions to them emerged.

Of course a great many varieties of glass weights and measure stamps dating from the Umayyad and 'Abbâsîd periods had long been known to scholars; but it was the monumental study of the superb collection of Egyptian examples in the Corning Museum of Glass by the late George C. Miles in 1971 which set an excellent and most useful standard for their identification and dating.<sup>3</sup> However, very little remains known about Syro-Palestinian examples.

<sup>1</sup> The author is deeply grateful to the Director and members of the staff of the 1974 Tell Hesbân Campaign for acceding him the privilege of studying these objects. Without the assistance of Miss Eugenia Nitowski, who provided all manner of necessary background material, excellent photographs and drawings, as well as constant encouragement, the study could not have been accomplished.

<sup>2</sup> L. T. Genaty, "The Excavations at Tell Hesbân, 1974," *Newsletter No. 5, American Schools of Oriental Research* (1974), p. 7.

<sup>3</sup> "Umayyad and 'Abbâsîd Glass Weights and Measure Stamps in the Corning Museum," *Journal of Glass Studies* 13 (1971): 64-76, including the exhaustive bibliography on 76. The author will remain forever grateful that Dr. Miles had an opportunity to examine the objects from Tell Hesbân before his death in 1975, and that his successor at the American Numismatic Society, Dr. Michael L. Bates, has provided him with every assistance since.

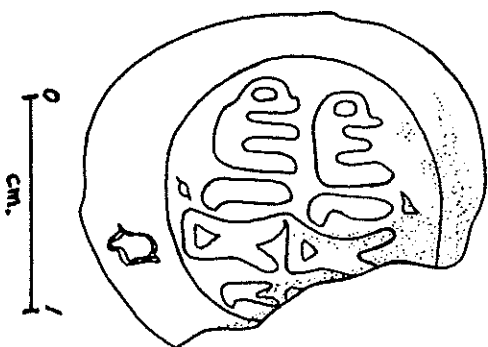


Fig. 23. Handcopy of Glass Weight H74 2106.

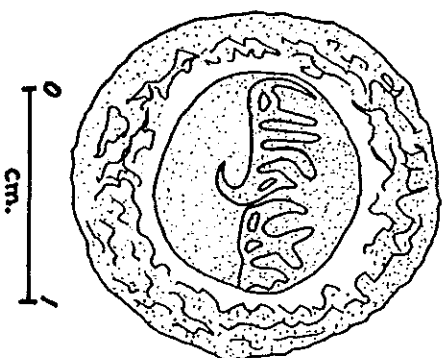


Fig. 24. Handcopy of Glass Weight H74 2060.

In illustration of the enigmas they present, it is best to begin with a description of the objects.

*Glass Weight—H74 2106 (AJAM 74413)* — cf. Fig. 23 and Pl. XVI:A.

Findspot: G.6, Locus 29.

Condition: a broken (by modern workmen?) inscribed glass weight with a filed back (old because of the condition of the patina).

Color: translucent blue-green glass.

Size: 19 x 16 x 3 mm.

Weight: 1.3012 gm. (after cleaning).

Inscription: *lâ ilâha ill-allâh* (There is no god but God).

*Glass Weight—H74 2060 (Department of Antiquities of Jordan)*

—cf. Fig. 24 and Pl. XVI:B.

Findspot: A.9, Locus 54.

Condition: a whole inscribed glass weight, highly pitted.

Color: translucent green glass.

Size: 17 x 16 x 3 mm.

Weight: 1.2535 gm. (after cleaning).

Inscription: *ill-A* (decorative sign) -*llâh* (but God, the second half of the first part of the *shahâdah*); this reading is uncertain.

The inscriptions are an acceptable place to start enumerating the difficulties. Specifically, the inscription on H74 2106, familiar as it is throughout the Islamic world on innumerable objects of all periods, is, to the knowledge of all experts queried, unparalleled on glass objects of this type. The epigraphical style dates the object with fair certainty to the later Umayyad period.<sup>4</sup>

The other object, H74 2060, is probably somewhat later; Dr. Bates has even suggested, "but without much assurance," that

<sup>4</sup> Dr. Miles' card index and the manuscript catalog of Paul Balog's collection, an incomparable ensemble, were thoroughly examined by Dr. Bates for this study. Cf. Balog, "Quelques estampilles en verre arabes du huitième siècle A.D. avec les noms de drogues," *Journal of the Economic and Social History of the Orient* 6 (1963): 219-227.

it could be as late as early Fātimid. The fact that the pottery readings in both squares include Ayyūbid/Mamlūk would certainly not rule out a Fātimid date, despite the dominant Umayyad.<sup>5</sup> The inscription is a difficult one. The first word could be *al-imām* provided the tiny lump on the right is not an *alif*. That would likewise support a later dating. The rest of the inscription is very unclear. Above all, no glass objects with a one-line inscription like this one have been located elsewhere.

Thus neither of the objects could be described as simply a "seal impression" in the customary sense. They are both rather exactly similar in fabric to Egyptian glass coin weights. The inscriptions, however, are apparently anomalous, leading to an initial doubt whether these objects were, indeed weights or rather tokens or amulets, and also whether they are Egyptian or of local manufacture.

Dr. Balog has advanced the theory that some glass objects of a roughly similar date but otherwise quite unlike them served as currency or a substitute therefor. The fact that many coins of all of these periods bear the inscription of H74 2106 (on occasion) can hardly be advanced as evidence for coinage: the mere fact of the use of glass would support only the "token" or "substitute" explanations.<sup>6</sup> The suggestion that they were amulets or decorative ornaments can virtually be disregarded.

The best solution was reached by this author when he asked the question: "But why must we consider the objects merely as glass? Would we not learn more about their usage, and something to explain their anomalous inscriptions, by examining their reverse sides much more closely?" This proved to be a very rewarding line of investigation.

At first glance to the naked eye, the only difference between

<sup>5</sup> On the question of the existence of Tell Ḥeṣbān in 'Abbasid times, cf. the references in James A. Sauer, "Area B and Square D.4," *AUSS* 13 (1975): 139, n. 6.

<sup>6</sup> Balog, op. cit., passim; cf. Miles, "Islamic Coins," in F. O. Waagé, ed., *Amīch-ou-the-Orientes*, 4, 1 (Princeton, 1948): 109-124. Abraham Tarian's reports on the coins from the previous campaigns at Tell Ḥeṣbān should also be consulted.

the reverse sides of H74 2106 and H74 2060 is simply that the former is quite smooth (extremely so to the thumb), with no ridge at all, obviously the result of the fling, and the broken edge is in no way unusual. The latter is quite rough, with visible traces of bluish color; the obverse, by the way, is stamped with the utmost perfection.

Wondering what a closer—indeed the closest possible—examination of the objects as a whole, but particularly their reverse sides, would reveal, the author applied for assistance to two of his colleagues in metallurgy and chemical engineering. An intensive experiment was performed upon the objects, with results which permit a few statements of greater accuracy about them than otherwise would have been possible.<sup>7</sup>

The experiment had its almost mystical side for the author. Beneath the highest-powered metallurgical microscopes, the objects (particularly the reverse of H74 2060) immediately took on the appearance of a riotously-colored universe of stars. One by one the galaxies were identified by the scientists.

Meaningful answers began to form. It appeared that both of these objects had been applied to metal surfaces, almost certainly bronze, by means of an enamel to which dyes had been added, during the final hardening of the enamel. Only the portion of the larger metal object need have been enameled upon which the glass seal was to be attached. It was considered possible, but unlikely, that a similar process, employing the application of porcelain, might have been used on another substance. Evidence of this was just as visible on H74 2106 as on H74 2060. Intensive chemical analysis of the components of the enamel or porcelain was thought to be too lengthy and expensive a process to warrant undertaking at this time. No unanimous hypothesis concerning the fling of the reverse of H74 2106 was reached.

The hypothesis was favored that these objects were, indeed,

<sup>7</sup> The author records with appreciation the generous advice and help of George C. Kuczynski, professor of metallurgy, and James J. Carberry, professor of chemical engineering, both of the University of Notre Dame.

but in a novel sense, glass weights. They were probably attached to smooth pyramidal metal masses of standard weight. It was allowed that they might also have been attached (by the same method) to vessels of standard measurement. They were, indeed, marks of the official authenticity of the weights (and/or measures) to which they were attached.

In this sense, they were not unrelated to the types of coin weights, ring weights, disk weights, and vessel stamps so well studied by Dr. Miles and others.<sup>8</sup>

Yet these glass weights stand out far more sharply than other official marks on fired clay vessels, or heavy weights used literally to measure out cotton-seed oil, ointments, hair dye, honey, and white cummin. The "full measure" (*wāf*) was not mentioned on them; they were not dated or "ordered" by the "financial director" of the Caliph. Apparently they were more like hallmarks.

It is to be hoped that more of their kind will come to light.

#### POST-NOTE

Further evidence favoring local manufacture (rather than Egyptian), and incidentally confirming the connection with enamel work, is provided by a reference in Al-Tha'ālibi al-Naysābūri (961-1038), *Lata'if al-Mā'ārif*, ed. P. de Jong (Leiden, 1867), p. 95. He remarks that the glass industry "of Sidon, Tyre and other Syrian towns" was "proverbial for its clarity and thinness." Philip K. Hitti, *History of the Arabs*, 10th ed. (New York, 1970), p. 346, adds: "In its enamelled and variegated varieties Syrian glass as a result of the Crusades became the forerunner of the stained glass in the cathedrals of Europe. Glass and metal vases of Syrian workmanship were in great demand as articles of utility and luxury. Sconces of glass bearing enamelled inscriptions in various colours hung in mosques and palaces." The character of our examples, however, suggests anything but decorative purposes, and the hypothesis still stands.

<sup>8</sup> "Umayyad and 'Abbasid Glass Weights," *passim*.