

## Arab Imagery on Early Umayyad Coins in Syria and Palestine: Evidence for Falconry\*

ANDREW ODDY

[PLATES 19-20]

THE most recent illustrated survey of the early Umayyad coinage is that of Walker, who presented a magisterial account of the series in his two volumes of *British Museum Catalogue*.<sup>1</sup> Since the publication of the volume containing the Arab-Byzantine coins in 1956, numerous new types and varieties of these coins have been discovered and published, and a modern overview of the Syrian and Palestinian series in particular has been provided by Bates.<sup>2</sup>

Of particular interest are the stages by which the early copper coins struck under the Arabs lost their pseudo-Byzantine character and gradually introduced Arabic features, until they were replaced by the almost purely epigraphic types of the reform of 'Abd al-Malik in AH 77.<sup>3</sup> The most notable of these changes was the replacement of the standing emperor (Pl. 19, 1) with that of the standing caliph (Pl. 19, 2) on the obverse and of the uncial 'm' or capital 'M' by a transformed 'cross on steps' on the reverse. The dating of

\* Numerous people have kindly provided information, references or offprints which have guided me through the literature in an unfamiliar field. For this assistance I am particularly grateful to: Dr G. Åkerström-Hougen, Professor A. D. H. Bivar, Mr D. Buckton, Dr A. Farrer, Dr P. O. Harper, Professor R. Hillenbrand, Mr G. House, Dr J-P. Lamm, Miss V. Porter, Professor M. Rogers, Dr E. Sims, Dr L. Sjösvärd, Dr G. R. Smith, Professor W. Watson, Ms S. Weir, and Professor R. Whitfield. For access to unpublished coins I am grateful to Mr B. T. Curtis of Messrs A. H. Baldwin, Mr F. Kovacs, Professor P. Grierson and Mr H. Weller, as well as to a number of private collectors. In particular, Dr N. Goussous sent aluminium rubbings from coins in collections in Amman from which it was possible to make plaster casts. The Keepers of coins at the American Numismatic Society, The British Museum and the Bibliothèque Nationale generously allowed me to make casts of relevant pieces in their care.

<sup>1</sup> J. Walker, *A Catalogue of the Arab-Byzantine and Post-Reform Umayyad Coins* (1956); id., *A catalogue of the Arab-Sassanian Coins* (1941).

<sup>2</sup> M. L. Bates, 'The "Arab-Byzantine" bronze coinage in Syria', in *A Colloquium in Memory of George Carpenter Miles (1904-1975)* (New York, 1976), pp. 16-27; id., 'History, geography, and numismatics in the first century of Islamic coinage', *Revue Suisse de Numismatique* 65 (1986), pp. 231-62; id., 'The coinage of Syria under the Umayyads, 692-750 AD', *The Fourth International Conference on the History of Bilād al-Shām during the Umayyad Period*, eds. M. A. Bakhit and R. Schick (Amman, 1989), pp. 195-228.

<sup>3</sup> P. Grierson, 'The monetary reforms of 'Abd al-Malik', *JESHO* 3 (1960), pp. 241-64.



these changes on the copper coins is not known with certainty, but it is generally assumed that the introduction of the standing caliph coincides with his first appearance on the dated gold coinage in AH 74 (AD 693-4).<sup>4</sup>

The dating of the earlier so-called 'Arab-Byzantine' coinage, with pseudo-imperial figures on the obverse, is uncertain, but Bates thinks that it was all probably produced during 'a short period immediately preceding the introduction of the standing caliph type' in AH 74 (AD 693-4),<sup>5</sup> while Oddy has postulated that it may have begun as early as the late 670s.<sup>6</sup>

During the Arab-Byzantine phase of the coinage, before the introduction of the standing caliph, the most notable Arabic feature on the coins was the Arabic legend written in kufic script, which had gradually replaced the legends written in Latin and Greek. This is demonstrated by the changes from the mixed Latin and Greek legends on Pl. 19, 3, 4, through the Greek/Arabic on Pl. 19, 5, 6, to the Arabic only (apart from the enigmatic AEO in the right hand obverse field) on Pl. 19, 7, 8 for the coinage of Damascus. It must be stressed, however, that this sequence depends only on the changing script and is not yet firmly established chronologically on the basis of hoard evidence, die-links or overstrikes.

There are, however, other features of the coins which have never been satisfactorily explained, in particular the various symbols which appear in the field, (usually) to the left of the imperial figure on the coins of Damascus and Tiberias, and on a number of mintless coins, which have affinities with the Damascus issues in some cases.

These symbols consist most commonly of a bird on a stand (Pl. 19, 3-15), less commonly of a palm branch on a stand (Pl. 20, 16, 17), and rarely of a star and crescent on a stand (Pl. 20, 18, 19). In all cases the stand has the appearance of a letter 'T', but the bird on stand symbol reveals that it is a stand (or in these cases a perch), rather than a letter. Walker interpreted the bird as an eagle, and thought that it may have been derived from a Roman sceptre,<sup>7</sup> but the discovery of a number of coins on which the bird has been transferred to the right of the figure reveals the true nature of this bird and of its iconographic significance.

Ten coins have now been examined (Pl. 20, 20-29) on which the bird sits on the outstretched left arm of the standing figure, and there can be no doubt that this is a representation of a man holding a falcon (Fig. 1). These ten coins were struck from five obverse dies and nine reverse dies, four of which are blundered copies of Damascus reverses (with a capital 'M'), while the

<sup>4</sup> G. C. Miles, 'The earliest Arab gold coinage', *ANSMN* 13 (1967), pp. 205-29.

<sup>5</sup> M. L. Bates, 'On the need for an historical and geographical approach to Umayyad coinage', unpublished typescript presented at the World of Islam Symposium in London in 1977.

<sup>6</sup> W. A. Oddy, 'The "Constans II" bust type of Arab-Byzantine coins of Hims', *RN* 6<sup>29</sup> (1987), pp. 192-7.

<sup>7</sup> *Cat. Arab-Byzantine*, cit. in n. 1, p. xxi.



FIG. 1. Composite line drawing of three of the coins showing a man with a falcon on his left wrist. These are drawn from the obverses of Nos. 20-22, Nos. 23-26, and No. 27.

other five belong to the extensive mintless series (with an uncial 'm' reverse). In addition, there is an eleventh coin (Pl. 20, 30) which may show a bird on the proper left of the figure, although the representation is not so clear.

One of the obverses (Pl. 20, 20-22) also has a palm branch to the left of the figure, but instead of resting on a T-shaped stand, the palm branch has a cross-on-circle symbol beneath it. The right hand of the figure holds a long staff, but this does not have a cross at the top, as it usual on the standing emperor Arab-Byzantine coins. There is also another object hanging below the outstretched left arm, the exact nature of which is uncertain. It looks rather like the head of a sheep (or other animal), but it may only be a bag for holding the game caught by the falcon. The second obverse (Pl. 20, 23-26) has a similar figure, but this one holds a long cross in the right hand. On only one of the four specimens of this obverse (Pl. 20, 25) is it possible to see that there is a symbol in the field to the left of the standing figure. This symbol appears to be a letter 'E', or possibly a 'star and crescent', thus ☉. To the right of the figure there is a human bust below the outstretched left arm. The figure on the third obverse (Pl. 20, 27) also holds a long cross in its right hand and has the letters 'A' and 'K' in the field to the left. There does not appear to be a symbol below the outstretched left arm on which the falcon is sitting. The fourth and fifth obverses are similar, but without any trace of an obverse inscription.

All five obverses have one other feature in common; the clothes worn by the standing figure differ significantly from those worn by the usual 'standing emperors' on the Arab-Byzantine coinage. On the latter the gown hangs vertically, or almost vertically, without a belt (Pls. 19 4-15, and 20, 16-19), while on these five obverses the gown is belted at the waist and the skirts are flared out (Pl. 20, 20-29). This is presumably a representation of the clothing normally worn for hunting by whoever is represented on these coins. All five obverses also show the figure with long flowing hair, which is fastened with a headband on the first obverse (Pl. 20, 20-22), but which appears to hang loose on the second (Pl. 20, 23-26). The third and fourth obverses show the



figures wearing some sort of headdress on the crown of the head, with long tresses hanging down on both sides of the face (Pls. 20, 27, 28). The head of the fifth obverse (Pl. 20, 29) is indistinct.

On the eleventh coin (Pl. 20, 30), the figure on the obverse is dressed in the normal garb of the 'standing emperor', and holds a long cross in his right hand. The left arm appears to be missing and the bird (if it is a bird) stands on an orb. Below this there appears to be a human head, which connects the coin firmly with nos. 23-26.

As there can be little doubt that these coins depict a man holding a hawk or falcon, there can equally be little doubt that the birds on stands in the left field of the coins of Damascus (Pl. 19, 3-8), Tiberias (Pl. 19, 9, 10) and of the mintless issues (Pl. 19, 11-15) represent falcons resting on their perches. Unfortunately, however, these eleven coins cannot be attributed to any particular mint, and there is some evidence that they are, in fact, irregular issues. Four of the reverse dies (Pls. 20, 20, 21, 23, 24 and 25) are blundered and retrograde copies of a common Damascus reverse, while the other six, with an uncial 'm' (Pl. 20, 22, 26-30) are mintless, although one of them has a blundered Damascus legend (Pl. 20, 26) with XTII to the right of the 'm' and [ ]OH (for ΔAM) in the exergue. Although the mints of these coins cannot be located with certainty, they can presumably be associated with the Damascus region. But who was the issuing authority, and why should falcons and falconers appear on these coins?

It has been suggested that the Umayyad love of hawking was generated by their contacts with Byzantium and Central Asia in the seventh century,<sup>8</sup> but there is evidence that falconry was probably widespread throughout Europe and the Far East before this, so there is no reason to think that it was not also familiar to the pre-Islamic Arabs.

That the contemporary Chinese know how to hunt with falcons is demonstrated by a T'ang Dynasty wall painting in the tomb of Li Hsien at Ch'ien-hsien, Shensi Province. He died in AD 684, but was reburied in a new tomb in AD 706.<sup>9</sup> This painting illustrates horsemen setting out for the hunt, accompanied by Central Asian grooms and retainers who are distinguishable by their turban-like hats.<sup>10</sup> Wallpaintings from another T'ang tomb of the same date, that of Li Chung-jun, illustrate trainers standing among trees holding falcons on their wrists.<sup>11</sup> As far as the origins of falconry in the Far East are concerned, Schafer believes that literary evidence indicates the third century BC,<sup>12</sup> but it is only with the second century AD (Han Dynasty) that

<sup>8</sup> J. D. Latham, 'Hunting and fowling, Islamic', in J. Strayer, (ed.), *Dictionary of the Middle Ages* vol. 6 (New York, 1985), pp. 355-6.

<sup>9</sup> *Murals from the Han to the Tang Dynasty* (Peking, 1974), pp. 12-13 and fig. 71.

<sup>10</sup> W. Watson, *The Genius of China* (1973), p. 145, no. 304.

<sup>11</sup> Op. cit. in n. 9, pp. 13-14, and figs. 90 and 91.

<sup>12</sup> E. H. Schafer, 'Falconry in T'ang times', *T'oung Pao* 46 (1958), pp. 293-320.

references to falconry in China become sufficiently common to provide a reasonable degree of certainty. There are, indeed, indications that a treatise on falconry was written during the Han Dynasty,<sup>13</sup> but this has not survived.

From the Byzantine Empire the earliest evidence for falconry is the depiction of hawking on the early sixth century mosaics in the 'Villa of the Falconer' at Argos in southern Greece.<sup>14</sup> Here falcons are seen both sitting on the left wrists of the huntsmen and also in the act of taking (what appear to be) water-fowl. Another Byzantine mosaic, from the Imperial Palace in Constantinople,<sup>15</sup> also seems to show evidence of falconry. Among the hunting scenes is an illustration of a bird of prey attacking another bird, and also a picture of two boys, one of whom holds a bird on his left hand, riding on a camel. Although the bird is not a particularly good representation of a bird of prey, the presence of the camel provides a Middle Eastern connection which increases the likelihood that this scene does represent falconry. Although dates throughout the sixth and seventh centuries have been suggested for the palace mosaics in the past, they have most recently been attributed to the reign of Heraclius (AD 610-641).<sup>16</sup>

The evidence for the origins of falconry in Europe has been discussed by Gunilla Åkerström-Hougen,<sup>17</sup> and she concluded that the pre- and early-Roman literary and iconographic evidence for the use of birds of prey in hunting refers either to the use of tame birds as decoys to attract wild birds onto bird lime, or to the exploitation of the hunting activities of wild falcons which enabled the frightened quarry to be trapped more easily. True falconry in the West can, however, be traced in a number of late-Roman and early Medieval literary sources dating from the fourth and fifth centuries.<sup>18</sup> As far as iconographic evidence is concerned, there is a depiction of a bird of prey in the act of taking a duck (?) on the gold and garnet cloisonné panels from the purse of the Anglo-Saxon King (presumed to be Rædwald) who was buried at Sutton Hoo, Suffolk, in c. AD 625.<sup>19</sup> The fact that hawking was a sport of the nobility and royalty suggests that this scene can be taken as contemporary evidence for the use of trained birds of prey for hunting in England in the early seventh century, particularly as actual remains of

<sup>13</sup> E. H. Schafer, *The Golden Peaches of Samarkand* (Berkeley and London, 1963), p. 303, n. 23.

<sup>14</sup> G. Åkerström-Hougen, 'The calendar and hunting mosaics of the villa of the falconer in Argos', *Skrifter Utgivna av Svenska Institutet i Athen* 23 (2 vols.) (Stockholm, 1974).

<sup>15</sup> J. Trilling, 'The soul of the Empire: style and meaning in the mosaic pavement of the Byzantine Imperial palace in Constantinople', *Dumbarton Oaks Papers*, No. 43 (Washington: Dumbarton Oaks Research Library and Collection, 1989), pp. 27-72.

<sup>16</sup> J. Trilling, op. cit. in last note.

<sup>17</sup> G. Åkerström-Hougen, op. cit. in n. 14, pp. 91-3.

<sup>18</sup> G. Åkerström-Hougen, op. cit., pp. 97-9; ead., 'Falconry as a motif in early Swedish art', in *Les Pays du Nord et Byzance (Scandinavie et Byzance)*, Actes du Colloque d'Upsal 20-22 avril 1979 (Acta Universitatis Upsaliensis. FIGURA, Nova Series, 19, Uppsala, 1981), pp. 263-93.

<sup>19</sup> R. Bruce-Mitford, *The Sutton Hoo Ship Burial* (1978), vol. 2, pp. 508-12.



(presumably trained) falcons have been found in a number of rich graves in the Lake Mälaren area of central Sweden dating to the second half of the first millennium,<sup>20</sup> and, in particular, to the early seventh century.<sup>21</sup> The 'Swedish connection' at Sutton Hoo is well known.<sup>22</sup> Other iconographic evidence for Early Medieval falconry in Northern and Western Europe has been collected by Åkerström-Hougen.<sup>23</sup>

In summary, then, the evidence for the history of falconry points towards its being practised in the Far East by the early first millennium AD at the latest, and in Western Europe before the middle of the millennium. It is thus very surprising that there is almost no pre-Islamic evidence from the Middle East. The Sasanians, who delighted in representing hunting on their silver plate, seem only to have included falconry on one surviving vessel,<sup>24</sup> a rather late vase, probably dating from the seventh century.

The same lack of evidence is encountered for the early Islamic world, although the caliph Yazid b. Mu'awiya (AD 680-3) is traditionally said to have shown 'an unbridled enthusiasm for the flying hunt'.<sup>25</sup> The earliest pictorial evidence, other than the coins discussed here, for the popularity of falconry among the Arabs are some Persian textiles dating from about the ninth to tenth centuries AD,<sup>26</sup> and a ninth or tenth century drawing found on a wall at Nishapur.<sup>27</sup> From the turn of the tenth and eleventh centuries there is another remarkable textile illustrating falconry<sup>28</sup> which bears the title of the Spanish Umayyad wazir 'Abd al-Malik al-Muza'ffar, son of al-Manšūr, who died in AD 1008 (AH 399-400), and there is a number of ivory boxes, carved in Spain, also depicting falconers.<sup>29</sup> Examples are the caskets of Ziyād ibn Aflah, the prefect of police at Cordoba, which was made in AH 359 (AD 969/970), and that made for 'Abd al-Malik a few years later. Apart from the iconographic evidence for falconry in the 'Abbāsīd period, there are numerous literary references,<sup>30</sup> including many poems on hawking by Abū

<sup>20</sup> S. Sten and M. Vretemark, 'Storgravsprojektet - osteologiska analyser av yngre järnålderns begravningar', *Fornvännen* 83 (1988), pp. 145-56.

<sup>21</sup> L. Sjövärd, *Haukr - en ringer från Vallentuna* (Stockholm, 1989).

<sup>22</sup> R. L. S. Bruce-Mitford, *The Sutton Hoo Ship Burial: A Handbook* (3rd. edn, 1979), pp. 116-19; but see also D. M. Wilson, 'Sweden-England', in *Vendel Period Studies*, eds. J.-P. Lamm and H. A. Nordström, (Stockholm, 1983), pp. 163-6.

<sup>23</sup> G. Åkerström-Hougen, 'Falconry as a motif', op. cit. in n. 14.

<sup>24</sup> P. O. Harper, *The Royal Hunter: Art of the Sasanian Empire* (New York, 1978), pp. 65-7.

<sup>25</sup> F. Viré, 'Bayzara', in *The Encyclopaedia of Islam*, new edn, (Leiden and London, 1960), vol. 1, pp. 1152-5.

<sup>26</sup> G. Wiet, *Soieries Persanes*, Mémoires présentés à l'Institut d'Égypte, vol. 52 (Cairo, 1947); id., 'Un tissu musulman du nord de la Perse', *Revue des Arts Asiatiques* 10 (1936), pp. 173-9.

<sup>27</sup> C. K. Wilkinson and W. Hauser, 'The Museum's excavations at Nishapur', *Bull. Met. Mus.* Art 37 (1942), fig. 45.

<sup>28</sup> E. Baer, 'The suaire de St. Lazare', *Oriental Art* 13 (1) (1967), pp. 36-49.

<sup>29</sup> J. Beckwith, *Caskets from Cordoba* (1960).

<sup>30</sup> F. Viré, 'La fauconnerie dans l'Islam médiéval (d'après les manuscrits arabes, du VIII<sup>e</sup> au XI<sup>e</sup> siècle)', in *La Chasse au Moyen Âge*, Actes du Colloque de Nice, 22-24 juin, 1979 (Nice, 1980), pp. 189-97.

Nuwās, who died in AH 199,<sup>31</sup> and there is an Arabic manual on falconry dated to AH 385.<sup>32</sup> Of course, it goes without saying that falconry has remained popular in the Middle East into modern times.<sup>33</sup>

Given this weight of evidence for the widespread knowledge of falconry before the middle of the first millennium AD, and its, known popularity in the Middle East from at least the early Umayyad period, it seems not unreasonable to presume that it was practised by the Umayyad Caliphs when they occupied their hunting lodges and palaces in the desert.<sup>34</sup> It is not really surprising, therefore, to find falconry depicted on Arabic coins which must be dated before the coinage reform of the Caliph 'Abd al-Malik in AH 77 (AD 696-7).

The question is, how much earlier can these coins be dated? Could they be as early as the reign of Yazid B. Mu'awiya (AD 680-3), who is known to have delighted in falconry? In view of the extensive nature of the Arab-Byzantine coinage, these falconry coins are another piece of evidence suggesting that the earliest Arab minting may be attributable to the earlier Umayyads, rather than to the reign of 'Abd al-Malik.

Why, however, are the falconry coins of two main types; one being the regular issues of Damascus (Pl. 19, 3-8) and Tiberias (Pl. 19, 9, 10) and the mintless series (Pl. 19, 11-15) with the falcon on a perch, and the second showing an actual falconer with the falcon on his left wrist (Pl. 20, 20-30)?

The falconer is obviously dressed for hunting and his knee- or shin-length belted shirt bears comparison with the dress of the huntsmen on the Byzantine mosaics at Argos<sup>35</sup> and is similar to the traditional dress of the desert tribesmen in the Arabia of yesteryear.<sup>36</sup> Is it possible, then, to explain these rather crude coins as issues of a temporary mint at one of the desert hunting lodges or palaces?

That the falconer coins are of the Umayyad Period is certain, and that they are barbarous, when compared with the regular coinage of Damascus, is obvious. What else can explain such an innovation in design than that they are an 'emergency' coinage, struck at a temporary mint in the desert, depicting the dress and occupation of the Caliph when the court was situated at one of the palaces in the Jordanian or Syrian desert?

<sup>31</sup> A. Wormhoudt (trans.), *Abu Nuwas, al-Hasan ibn Hakam, Diwan* (2 vols., Pennsylvania, 1974), vol. 2, pp. 187ff.

<sup>32</sup> B. Lewin, 'Le grand fauconnier de 'Aziz-billah al-Fatimi', *Orientalia Suecana* 8 (1958), pp. 110-21; F. Viré (trans.), *Le Traité de l'Art de Volerie (Kitāb al-bayzara)* (Leiden, 1967).

<sup>33</sup> M. Allen, *Falconry in Arabia* (London, 1984).

<sup>34</sup> R. Ettinghausen and O. Grabar, *The Art and Architecture of Islam 650-1250* (The Pelican History of Art, Harmondsworth, 1987), pp. 45-71; O. Grabar, *The Formation of Islamic Art* (revised and enlarged edn, New Haven and London, 1987).

<sup>35</sup> G. Åkerström-Hougen, 'The Calendar and Hunting Mosaics', op. cit. in n. 14, Pls. 4.2, 5.1 and 6.1.

<sup>36</sup> W. Thesiger, *Arabian Sands* (1959), Pls. 11 and 16.



## LIST OF COINS ILLUSTRATED

The columns, from left to right, contain: the plate and coin number, the mint, the weight, the die axis, the location and the inventory number (where relevant). The location codes are: P = private collection, PG = Grierson collection in the Fitzwilliam Museum, BN = Bibliothèque Nationale, BM = British Museum, T = trade, ANS = American Numismatic Society. Die identities are indicated on the plates.

19, 1	Damascus	5.07	5.00	P	
19, 2	Damascus	3.15	5.00	PG	
19, 3	Damascus	4.06	7.00	PG	Inv. No. 10852
19, 4	Damascus	3.37	7.00	P	
19, 5	Damascus	5.10	4.30	BN	Lavoix 3
19, 6	Damascus	4.45	7.30	BN	Lavoix 6
19, 7	Damascus	5.07	4.30	BM	Walker 19
19, 8	Damascus	3.61	7.30	P	
19, 9	Tiberias	4.40	2.30	BN	Lavoix 21
19, 10	Tiberias	3.27	2.00	P	
19, 11	Uncertain	3.20	5.00	T	
19, 12	Uncertain	4.34	4.30	BN	Lavoix 38
19, 13	Uncertain	4.42	2.30	P	
20, 14	Uncertain	3.34	7.00	ANS	Inv. No. 1972.161.15
20, 15	Uncertain	3.90	2.00	T	
20, 16	Damascus	5.32	11.30	P	
20, 17	Damascus	3.16	6.00	ANS	Inv. No. 1971.316.1198
20, 18	Damascus	2.92	6.30	P	
20, 19	Damascus	4.21	3.00	T	
20, 20	Uncertain	3.93	6.30	P	
20, 21	Uncertain	4.46	9.00	P	
20, 22	Uncertain	3.70	6.30	P	
20, 23	Uncertain	3.24	7.00	P	
20, 24	Uncertain	3.59	11.00	P	
20, 25	Uncertain	4.40	6.00	P	
20, 26	Uncertain	3.92	7.00	P	
20, 27	Uncertain	2.97	5.00	P	
20, 28	Uncertain	3.35	8.00	P	
20, 29	Uncertain	3.20	3.00	T	
20, 30	Uncertain	4.28	7.00	P	

## A Study of the Metropolitan Coinage of Qian Long\*

DAVID HARTILL

## INTRODUCTION

THIS study of the coinage of the two metropolitan mints (those attached to the Board of Revenue and the Board of Works) of the Qing dynasty Emperor

\* For convenience, dates during the reign are given in terms of the number of the year of the Emperor's year title. These can be translated into Western dates from the Chronological Table in Appendix I.

All weights and measurements were based on my own and the British Museum collections. My grateful thanks are due to Mr H. M. Scott who analysed the alloys for me, and to Mr J. Cribb of the British Museum for an advance copy of a paper on metallurgical analyses and other advice and assistance. Special thanks go to Mr B. R. Griffith who opened my eyes to the privy marks of the later coins, as well as freely providing advice and ideas. The interpretation of these privy marks, however, is entirely my own.

Abbreviations for works commonly cited:

Bowman: Bowman, Cowell, and Cribb, 'Two thousand years of coinage in China: an analytical survey', *The Journal of the Historical Metallurgy Society* 23 (1989), pp. 25-30.

Burger: Burger, Werner, *Ch'ing Cash until 1735* (Taiwan, 1976).

Bushell: Bushell, Dr S. W., 'Coins of the present dynasty', *JNChBRAS*, vol. 15, p. 198.

Cowell et al.: Cowell, Cribb, Bowman & Shashoua, *The Chinese Cash: Composition and Production*, in Royal Numismatic Society, *Metalurgy in Numismatics*, Vol. III, 1990/91 (in preparation).

DQHD (1764): *Qinding Da Qing huidian*. Ed. Prince Yun Tao et al. By Imperial command (Peking, 1764).

DQHD (1818): *Qinding Da Qing huidian*. Tuo Jin et al. By Imperial command (Peking, 1818).

GQDCD: *Gu qian dacidian*. Ding Fubao (Shanghai, 1936).

Griffith: Griffith, Bruce R. Trial Year Listing for Ch'ien Lung and Chia Ch'ing cash of Peking. Manuscript.

HDSL: *Qinding Da Qing huidian Shili*. Tuo Jin et al. By Imperial command (Peking, 1818).

Hummel: Hummel, A. W. (ed.), *Eminent Chinese of the Ch'ing Period* (Taipei, 1970).

L and C: *Xinjiang Qing qian pu*. Lan and Chen (Taiwan, 1982).

Palace collection: *Gu kong Qing qian pu*. Huang Pengxiao (Peking, 1937).

QSL: *Da Qing lichao shilu*. Xiu-jing (Peking, 1937).

SCSP: *Shimcho Senpu*. Hanawa Shiro (Tokyo, 1968).

Sim: Sim, E. E. 'The Shan-Lung cash (ca 1796-1803)', *Tongbao*, vol. 1, no. 3 (1975), and various research papers.

Sun Zhongho: Sun Zhongho, *Gu qianbi tuzie* (Shanghai, 1989).

SWSF: *Showa Senfu*. Hirao Sampai (Tokyo, 1974).

Tung Zuobin: Tung Zuobin, *Chronological Tables of Chinese History* (Hong Kong, 1960).

Tylecote: Tylecote, R. F., *A History of Metallurgy* (London, 1976).

WXTK: *Qinding Huangchao wenxian tongkao*. Chi Huang et al. By Imperial command (Peking, 1787).

XWXTK: *Qinding Huangchao xu wenxian tongkao*. Not dated.

YZQL: *Yong Zheng Qian Long nian jian de yin qian bijia biantong*. Chen Chaonan (Taiwan, 1966).

ZDLZ: *Huangchao zhengdian leizuan* (Taipei, 1969 edition).



ODDY, ARAB IMAGERY (1)





ODDY, ARAB IMAGERY (2)