

Genèse de la ville islamique en al-Andalus et au Maghreb occidental

*Actes recueillis et préparés par Patrice Cressier
et Mercedes García-Arenal*

Avec la collaboration de Mohamed Méouak

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Dirhams for the Empire

Elizabeth SAVAGE and Adon A. GORDUS

School of Oriental and African Studies, London – University of Michigan

«Dirhams for the empire», a rather grand title, is precisely what the North African mint at al-ʿAbbāsiya produced from the late 150s AH to the 170s. Along with al-Ifriqiya (al-Qayrawān), the two mints produced nearly a quarter of the silver coinage for the entire ʿAbbāsid empire. Though invariably regarded as peripheral by modern historians, North Africa was clearly central to the early ʿAbbāsid economy. Naturally, this vital economic role had political overtones requiring sensitive administration of the province. The two cities al-ʿAbbāsiya and al-Ifriqiya provide us with a focus for the economic and political development of North Africa from the 750s AD onwards.

This workshop is examining the role of North African and Maghribī cities in the medieval period. From the mint activity in al-ʿAbbāsiya and al-Ifriqiya we immediately perceive their economic importance. The question I will address here was how did this economic growth come about? My conclusions will focus not only on *dirham* production but also on other currents, such as the development of long-distance trade, Islamic sectarianism, and the control of the hinterland in North Africa. As an historian, my research has gradually layered up an interpretation of Ifriqiya in the second-century Hijra. To bear out theories deduced from textual sources, I have turned to numismatic evidence to see what additional light it can shed. In this I collaborated with professor A. A. Gordus of the University of Michigan. With his help, hundreds of coins were tested by neutron activation analysis (NAA), the results of which will be found in the tables III-XVI. Further details of this technique and its application to silver coin production in North Africa follows in the course of this discussion.

In the cities of al-ʿAbbāsiya and al-Ifriqiya in the second half of the eighth century, there is a convergence of developments which originated in the previous century in Iraq. Initially examined separately, it subsequently became clear that these themes were interconnected and were pieces of the same puzzle. For clarity's sake I shall first isolate and summarize three parts of my discussion before explaining them more fully.

The first component was the relationship between a particular family in the early Islamic period, the Muhallabids, and members of an Islamic sect known as the Ibādiya which originated in al-Baṣra towards the end of the seventh century AD. A second component was the development of this sectarian community, the Ibādiya, in North Africa in the second half of the eighth century. The spread of this sect among certain indigenous Berber groups accompanied the gradual penetration by Ibādi merchants into the Sahara and the subsequent rise of an Ibādi berber monopoly of the trans-Saharan trade. This third factor of the trans-Saharan trade is, I believe, directly related to the burst of *dirham* production beginning in the late 750s when the province of Ifriqiya came to be governed by members of the Muhallabid family.

These then are the three strands which will be seen to converge in al-'Abbāsīya and al-Ifriqiya with not only economic and political consequences but religious and social as well. Perhaps the pivotal theme of the three is the first: the relationship between the Muhallabids and Ibādis. This association originated in Umayyad Baṣra where both Muhallabids and Ibādis manoeuvred carefully with regard to the governor al-Hajjāj al-Thaqafi. Though there is no explicit reference to Muhallabid Ibādis, we know of Muhallabid women who took an active interest in the sect¹.

Both Muhallabids and Ibādis were persecuted by al-Hajjāj, the former almost to extinction and the latter was forced to leave Iraq. Both, however, survived the change of dynasty and reappeared on the 'Abbāsīd scene. The Muhallabids supported the early 'Abbāsīds and al-Ṭabarī cites several associated with Abū Salama and Abū l-'Abbās². The family is remarkable in that several members were appointed governor of various provinces simultaneously³. Of the provinces to which they were sent, it is Ifriqiya which is most closely associated with the Muhallabids where six were governor over twenty-two years (151 AH/768-769 AD-174 AH/790-791 AD).

The establishment in North Africa of the Ibādiya constitutes the next and second theme. Prior to the Muhallabids' arrival in North Africa, the province had been in revolt beginning in the 740s, on the eve of the 'Abbāsīd revolution. Into this, around 757, missionaries of the moderate Ibādi sect were sent from their mother cell in al-Baṣra to proselytise their teachings in the hotbed of Ifriqiya. Though obviously peripheral to events at the heart of the empire, Ifriqiya's importance was noted in an apocryphal tradition recorded by al-Ṭabarī as attributed to the Imām Muḥammad b. 'Alī b. 'Abd Allāh b. 'Abbās who said:

There are three turning points for us [that is, for the coming 'Abbāsīd success], the death of the profligate, Yazīd b. Mu'āwīya; the turn of the first century; and the disruption in Ifriqiya. Our helpers will advance from the east until their hooves strike the lands of the Maghrib and extract the treasures hidden there by tyrants⁴. Indeed, there were treasures in Ifriqiya, to which I will return.

¹E. SAVAGE, 'Survival through Alliance: Establishment of the Ibādiya', *BRISMES Bulletin*, 17/1, 1990, p. 5-15.

²AL-ṬABARĪ, *Ta'rikh al-rusul wa-l-mulūk* (= *Ta'rikh*), translated and annotated by J. A. Williams, Albany, 1985, p. 27, 57, 143-145, 186-188, 190, 195.

³N. D. NICOL, *Early 'Abbāsīd Administration in the Central and Eastern Provinces, 132-218 AH/750-833 AD*, PhD thesis, University of Washington, 1979 (cited with the author's kind permission).

⁴AL-ṬABARĪ, *Ta'rikh*, p. 148.

On turning to the second theme, the establishment of the Ibādis in North Africa, we run again into the Muhallabids. It was around 757, that the five Ibādi missionaries were sent from the Baṣran community to North Africa for the purpose of establishing an Ibādi imamate. I believe that the Caliph al-Manṣūr was not only aware of this but actually encouraged the introduction of a moderate Khawārij element (friendly to himself) in turbulent Ifriqiya. I say this because of the correspondence which passed between al-Manṣūr and the Ibādi leader, Abū l-Khaṭṭāb, through the intermediary, Yazīd b. Ḥātim al-Muhallab, who was then active in Egypt⁵. The association between the Muhallabids and Ibādis, though only briefly alluded to in the sources, was strong enough to survive from the 680s in al-Baṣra well into the 770s in Ifriqiya. In the period which followed, the Ibādiya were able to consolidate their tribal support, build a capital, Tahart, found a dynasty and create a trading network which would eventually establish a commercial monopoly of the trans-Saharan trade.

As the crucial link in the relationship between the central authority on the one hand and province on the other, the Muhallabid governors maintained political stability by virtually relinquishing the Ifriqyan hinterland to the (Ibādi) berber tribesmen and turning their attention to the setting up of markets—one of the first acts of the new governor Yazīd b. Ḥātim⁶. This attention to the region's economic revival was significant and is one of our first hints of Ifriqiya's treasure alluded to in al-Ṭabarī's apocryphal tradition. For once political and military authority in the coastal cities of the eastern and central Maghrib was re-established, Ifriqiya entered a period of great prosperity, in the vanguard of which we find Ibādi merchants who were uniquely involved in the development of the trans-Saharan trade—in particular the slave trade—in the second half of the eighth century⁷.

Again I will summarize the development of my third theme of Ibādi trade because it too has received treatment elsewhere⁸. Briefly, its origin lay in the conquest as Islam spilled westward across North Africa in a succession of military campaigns by Arab forces. The first twenty-five years of contact, beginning in the 640s with the raid by 'Amr b. al-'Ās, were a succession of military raids for the purpose of seizing booty. 'Uqba b. Nāfi' established the Arab presence in Ifriqiya and was recorded as extracting one kind of tribute slaves⁹. I have argued that the campaign of the 'Abbāsīd general, Muḥammad b. al-Ash'ath in the 760s AD was a punitive raid

⁵AL-KINDI, *Kitāb al-umara' al-wulāh wa-kitāb al-quḍāh*, ed. R. Guest, Leiden, 1912, p. 362-363. Correspondence also passed between Abū Khaṭṭāb and Ghūth ibn Sulaymān, al-Manṣūr's *qāḍī* in Egypt, *ibid*.

⁶IBN IDHARĪ, *al-Bayān al-mughrib fi akhbār mulūk al-Andalus wa-l-Maghrib*, translated by E. Fagnan, Algiers, 1901-1904, I, p. 90. Trade relations between al-Baṣra and cities in Ifriqiya were active, so much so that quarters in Tahart, the Ibādi capital, were named after the resident Baṣran and Kufan merchants. According to AL-YA'QUBĪ, Tahart was known as the 'Iraq of the Maghrib', *Kitāb al-Buldan* (= *al-Buldan*), edited and translated by G. Wiet, *Le Livre des Pays*, Cairo, 1937, p. 217.

⁷E. SAVAGE, 'Berbers and Blacks: Ibādi Slave Traffic in Eighth Century North Africa' (= 'Berbers and Blacks'), *Journal of African History*, 33, 1992, p. 351-368.

⁸*Ibidem*.

⁹See also by the same author, *The North African Response to the Arab Conquest: A Gateway to Hell, A Gateway to Paradise*, Princeton, 1996.

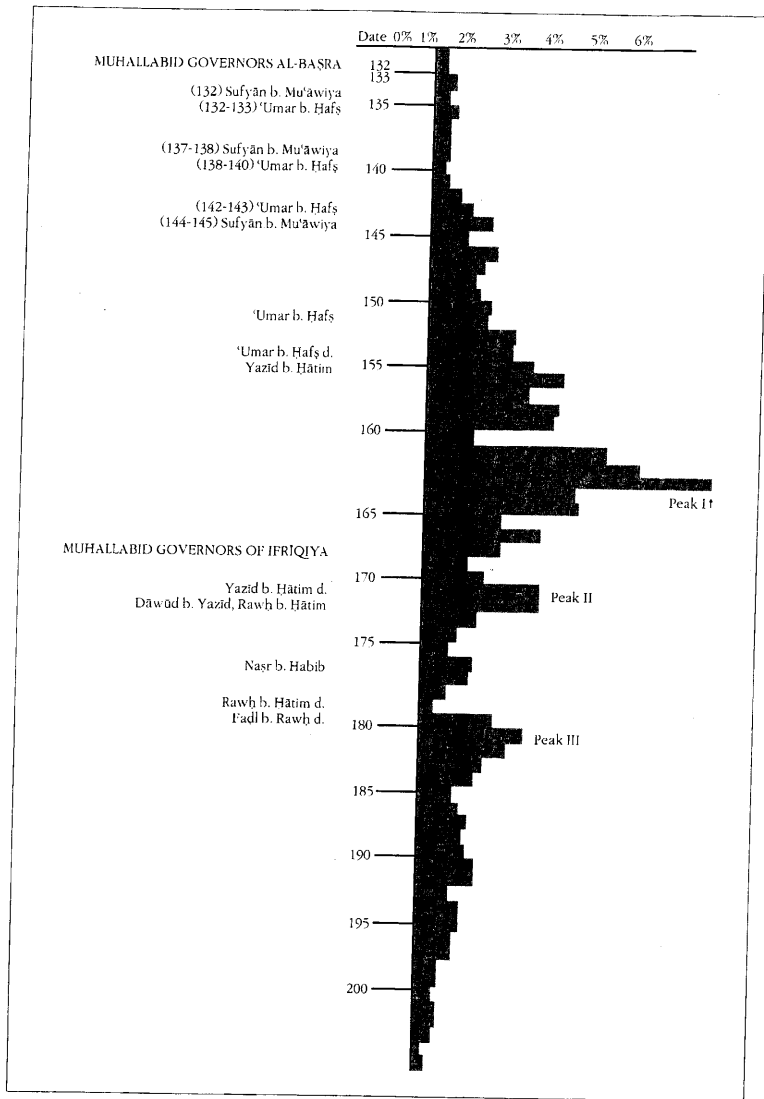


TABLE I. — Early 'Abbasid mint output (see T. NOONAN, 'Early 'Abbasid mint output', *JESHO* 29, 1986, 148).

against the Ibāḍis of Zawila¹⁰. It would seem likely that his campaign had for its objective not only a punitive measure against *rebellious non-conformists* but was, indeed, an attempt to secure the supply of black slaves and remove Ibāḍi and Berber control. Despite Ibn Ash'ath's attack, Ibāḍis continued to develop their trans-Saharan economy and are so described by the early medieval authors Ibn Ṣaghīr and Ibn Ḥawqāl. By the second half of the eighth century, Ibāḍis who were established in eastern and central Saharan trading towns, had a firm grasp on trade with the *Bilād al-Sūdān*.

Initially, Ibāḍism found ready acceptance among Berber tribes—most notably the Nafūsa, Mazāta and Luwāta for whom Ibāḍism had become a rallying point in the face of the Arab campaigns and accompanying enslavement. By the end of the eighth century Ibāḍi Berber tribesmen had changed roles from being slaves to being slavers, transporting blacks from *Bilād al-Sūdān*. On the basis of this trade, the Ibāḍi community founded a monopoly of trans-Saharan trade and subsequent wealth which reached its height in the following ninth century.

It has been necessary to briefly summarize three points: 1) the relationship between the Muhallabids and Ibāḍiyya, 2) the establishment of the Ibāḍiyya in North Africa and 3) their role in developing an alternative supply of slaves south of the Sahara in *Bilād al-Sūdān*. The stage is now set and our themes appear tightly interwoven and we can turn to the numismatic evidence. Silver *dirham* production from Ifriqiya where the Muhallabid Yazid b. Ḥātim was entrusted with both military and fiscal responsibility offers additional numismatic evidence. That quantities of *dirham*-s were minted in the North African mints of al-'Abbāsiya, Ifriqiya, al-Mubāraka, Walīla and Tudgha is undeniable. Production began in 151 AH/768 AD when the first Muhallabid, Yazid's cousin 'Umar b. Ḥafṣ, was appointed to the province (fig. 3). He was killed three years later, whereupon Yazid b. Ḥātim was sent. Within two years the rebellion was quelled and coin production began to rise (see table I, figs. 4-5). Yazid b. Ḥātim's success as governor of Ifriqiya secured a long period of stability and economic growth. This marked the beginning of what has been called the North African period of 'Abbāsid mint production during which the North African mint of al-'Abbāsiya «emerged as the single most productive mint» of the empire¹¹. Midway in Yazid b. Ḥātim's governorship it actually exceeded the capital's own output, with other North African mints coming into production as well. This lasted until the mid-790s AD/177 AH, when production dropped off sharply with very low levels of *dirham* output¹². For North Africa this ties in neatly with the end of Muhallabid stewardship under the brief direction of Yazid's equally long-lived brother, Rawḥ b. Ḥātim who died in 794 AD/178 AH.

¹⁰The following summary is elaborated in SAVAGE, 'Berbers and Blacks', note 11.

¹¹Th. NOONAN, 'Early 'Abbasid Mint Output (= 'Early 'Abbasid Mint-)', *Journal of the Economic and Social History of the Orient*, XXIX, 1986, p. 113-175, see p. 148.

¹²*Ibidem*, p. 151.

This remarkable growth cannot simply be credited to the return of the province to central control. Two obvious anomalies stand out. One is the sheer scale of output. That Ifriqiya was producing such a large quantity would imply that the capital mint in Madinat al-Salām in Iraq could not meet the need or more likely that there was a strong North African demand for coinage. The second anomaly, coinciding with the first, is the duration of Muhallabid rule in the province –for elsewhere it was generally the case that governors remained in a post briefly, sometimes even less than a year. Yazid b. Hātim's governorship alone lasted fifteen years (771-786 AD/154-170 AH). Both these factors reflect a prolonged period of military, political, and fiscal stability which encouraged economic growth fuelled by high levels of mint production. Clearly, the very high percentage of coin production from North Africa is indicative of intense economic activity.

How can we explain this high output from North African mints? I suggest that a significant portion provided the capital for the Ibāḍī economic expansion. This, in turn, led to a period of cooperation with Ibāḍīs in control of the hinterland and overland trade routes.

Yet another piece of the puzzle falls into place if we turn to the literature of medieval geographers. Here we discover a source of silver behind the surge of output and find that it was the Berbers who controlled mines at Tudgha and Majjāna. One sees from table II that coins were struck at Tudgha. They bore Yazid b. Hātim's name beginning as early as 771-786 AD/154-170 AH¹³. Located near the silver mines of Tāmdult (some forty miles to the south of Sijilmāsa), Tudgha was a stronghold of an important Ibāḍī ally, the Šufriya. Like the Ibāḍīya, the Šufriya originated from the same Khawārij environment of al-Bašra. There is even a tradition that the founders of the Maghribi Ibāḍī and Šufri communities, rode into Ifriqiya at the end of the first century *hijra* on the same camel¹⁴. In contrast to the extreme Azraqi Khawārij, the Ibāḍīya and Šufriya were both moderate and, together, had fought in the last and greatest wave of Berber revolt against the Arab governors. It was their powerful coalition which killed Yazid's cousin, 'Umar b. Ḥafṣ, and which Yazid b. Hātim finally defeated. The stakes had been high and in the end Yazid was able to reap the rewards; for soon after, coins were struck with his name at Tudgha. Such was the importance of the pact between the Šufri leadership and Muhallabid governor-suggesting a highly personalized oath of loyalty that even after his death in 786 AD/170 AH coins continued to be struck with his name first during the governorship of his son and then during that of his brother Rawḥ b. Hātim for another four years. Under subsequent Muhallabids, coins were struck in the name of the appointed governor, Našr b. Ḥabīb (174-176 AH) and al-Faḍl b. Rawḥ (176-179 AH).

¹³D. EUSTACHE, *Corpus des dirhams idrisites et contemporains* (= *Corpus*), Rabat, 1970-1971, p. 64, note 3.

¹⁴IBN KHALDUN, *Histoire des Berbères*, Algiers, 1852, III, p. 189. ABO ZAKARIYYA, 'La "Chronique" d'Abū Zakariyya' al-Warjānī (m. 471 H./1078 J.-C.)', translated by R. Le Tourneau and H. R. Idris, *Revue africaine*, 104, 1960, p. 99-176, p. 100. Scholars are divided on the veracity of this tradition. J. M. ABUN-NASR suggests it should be interpreted as referring to the beginning of an era when the Kharijite doctrine was being [...] propagated in the Maghrib, and not necessarily to the activities of its first two representatives [...]., *A History of the Maghrib*, Cambridge, 1987, p. 37.

TABLE II

Muhallabids in North Africa (150-179 H./767-794 AD)	
North Africa output:	1,79326 % of total*
Madinat al-Salām output:	3,36150 % of total
Total 'Abbāsīd output:	6,678
Governorship of Yazid b. Hātim (154-170 H./771-786 AD)	
North Africa output:	1,34125 % of total*
Madinat al-Salām output:	2,80653 % of total
Total 'Abbāsīd output:	5,295

* [T. NOONAN (1986), Appendices D, C1-2, based on 40 coin hoards].

Production dates of North Africa *dirham*-s

al-'Abbāsiya	156-179
Ifriqiya	160-163, 165-169, 171-174, 176
al-Mubāraka	174, 175, 179
Tudgha	162-166, 171-172
Walīla	173

Averages of Gold Impurity Levels and Silver Fineness

MINT	NUMBER	mg Au/100 mg AG	% AG
al-'Abbāsiya	52	0.097 ± 0.122	96.0 ± 2.6
Ifriqiya	40	0.084 ± 0.017	95.8 ± 1.4
Walīla	6	0.055 ± 0.081	96.5 ± 1.9
al-Mubāraka	7	0.022 ± 0.017	95.8 ± 1.4
Tilimsan	1	0.016 ± 0.002	91.8 ± 0.8
Tudgha	12	0.160 ± 0.317	94.4 ± 5.9
al-Andalus	44	0.119 ± 0.183	96.8 ± 1.6
Miṣr	8	0.151 ± 0.107	97.8 ± 1.6
Siqilliya	3	0.333 ± 0.107	95.0 ± 1.0
Madinat al-Salām	83	0.250 ± 0.132	98.7 ± 1.4
Qaṣr al-Salām	3	0.413 ± 0.199	97.8 ± 2.4

Šufri control of Tudgha and presumably its silver continued, as indicated by the later simultaneous striking of coins with the names of both Idrisid *amir*-s and coins bearing the name of the Šufri *imām* or his mint master¹⁵.

Another more important mint, that of Majjāna, was also controlled by Berbers. Unlike Tudgha, to which only one geographer refers¹⁶, there are several references to Majjāna dating to the ninth century¹⁷. The geographer al-Bakri, however, writing in the eleventh century, gives the fullest picture describing Majjāna as a large city surrounded by a brick wall and possessed a mosque, several baths and a great number of mines, one of which belonged to the Luwāta (a Berber tribe), and supplied silver¹⁸.

There are two important points here. Firstly this source of silver answers a question that immediately comes to mind when contemplating the leap in North African production – namely, where did the silver come from? The second point is the reference to the Luwāta. Here, for the sake of this argument, we have struck gold as the Luwāta are one of three Berber tribes with early Ibāḍī associations. You will remember that there were Berber tribes who revolted on account of persistent slaving by Arab generals. The Luwāta were a case in point¹⁹ and, as such, their role is pivotal and somewhat ironic. From being enslaved by ‘Amr ibn al-‘Āṣ in the mid-seventh century²⁰, they were forced ever westwards by the pressure of the Arab conquest and incoming Arab population only to come to rest around Majjāna where we find them in the eighth century in control of the mines. I would like to suggest that along with Tudgha, Majjāna was an important source for silver and that Yazid b. Ḥātim was able to negotiate a peace that not only secured military and political stability but also created a climate for a remarkable economic revival.

On the indigenous side were the Ibāḍīya and Šufriya. Their adherence to sectarian forms of Islam was initially mostly an expression of political opposition. Both had been part of the defeated Berber alliance. However, neither the Ibāḍī nor Šufri communities appeared to have suffered from their defeat. Rather for both it marked the beginning of a profitable alliance with the central ‘Abbāsīd authority as represented by the Muhallabids.

North Africa was a colony of the empire. Directives were not handed down from central office. Rather ties with the capital were preserved through collaboration with local elites. Local needs were met locally. Indigenous silver was minted in the province by local craftsmen. The reason North African mints operated so successfully was out of a mutual economic self-interest. On the one hand there was an

¹⁵The variety of names which reflect Šufri authority is understandable in the context of šufri communal government by council.

¹⁶IBN AL-FAQIH, cited by IBN KĪURADHABĪH (d. 911), who identifies a Khawārij Šufri prince who was minting coins there. EUSTACHE, *Corpus*, p. 132.

¹⁷*Al-Buldān*, p. 211. AL-BALĀDHURĪ, *Futūḥ al-buldān*, edited by P. K. Hitti, London, 1916–1924, p. 227–266. See also M. FORSTNER, *Das Wegenetz den Zentralen Maghreb in Islamischer Zeit*, Weisbaden, 1979, p. 163–166.

¹⁸AL-BAKRI, *Description de l’Afrique septentrionale*, Algiers, 1913, 2nd ed., p. 278/145.

¹⁹AL-BALĀDHURĪ, *Futūḥ al-buldān*, ‘Abd Allāh A. al-Tabbā’, ed. Beirut, 1957, p. 316.

²⁰IBN ‘ABD AL-ḤAKAM, *Futūḥ Ifriqiya wa-l-Andalus*, edited and translated by A. Gateau, Algiers, 1947, p. 36.

experienced governor with long-standing ties to both the local elite and the caliph. On the other hand there were indigenous Ibāḍīs who provided silver bullion which was struck into coins.

The Geniza archive some two hundred years later describes mints as purely commercial operations²¹. Financed by private partnerships, mints such as al-‘Abbāsīya and Ifriqiya were dependent on silver from miners, moneychangers, merchants, and anyone else with substantial amounts of silver²². The mint received a fixed percentage and the individual who had brought silver received current money. The provincial *amir* Yazid b. Ḥātim would have received a share, no doubt substantial, which would have enabled him to send generous tribute to his caliph, build an infrastructure after the years of rebellion, invest in commerce and lay down the basis for a family dynasty. The Ibāḍī Luwāta controlled the mines and possibly even the mints and minting. The Ibāḍī community in the second half of the eighth century had a large number of recent immigrants from al-Bašra and al-Kūfa. Among these there may have been the skilled craftsmen necessary for the mint operations.

One can see a change in North African *dirham*-s (151–154 AH) between those of the first Muhallabid governor ‘Umar b. Ḥafṣ who died in the rebellion and those of his successful cousin Yazid b. Ḥātim (figs. 4–5). ‘Umar’s coins, like the earlier Umayyad issues (fig. 1) are struck with clearly engraved dies which renders the inscriptions crisp and easily read. Those *dirham*-s struck under Yazid almost immediately (from 155 AH onwards) degenerate, with the inscription appearing as elongated blurred lines of the type associated with the North African *dirham* boom (fig. 4). Figures 6 and 7 contrast the prevailing styles of calligraphy; figure 6 is from al-‘Abbāsīya while figure 7 illustrates a contemporary issue from the ‘Abbāsīd heartland. The North African style is markedly different. It would appear that the die-engravers in the Maghrib had changed.

Al-‘Abbāsīya and Ifriqiya appear to have drained off the bulk of North African silver, suggesting their commercial terms were so attractive as to beat off any competition of other North African mints. Contemporary Moroccan mint production does not compare with al-‘Abbāsīya’s and Ifriqiya’s output. That the mines were exhausted during this period may be deducted from the reduced output of subsequent Idrisid mints.

The final piece of this puzzle was to determine whether or not the silver – the metal itself – of the North African *dirham*-s was demonstrably different from that struck by other contemporary mints. That it was so seemed a logical assumption, since transporting large quantities of heavy bullion to North Africa from any great distance would be unlikely.

To prove this distinction I turned to Profesor A. A. Gordus. The objectives we set were straightforward. Did North African *dirham*-s minted during the period of intense production differ from 1) contemporary coinage minted elsewhere, 2) earlier coinage and 3) later coinage? In other words, the analysis would determine

²¹S. D. GOITEIN, *A Mediterranean Society*, Berkeley, 1967, I, p. 82, 170, 267; II, p. 358.

²²I am indebted to Michael Bates of the American Numismatic Society for clarifying this point. Also permission to examine coins at the American Numismatic Society was much appreciated.



FIG. 1. — *Dirham*. Mint: Ifrtqiya, date: 103 AH/721 AD. Umayyad *dirham* from North Africa with standard Umayyad inscriptions and calligraphy. (Spink Zurich Auction 22–17 March 1987–, n° 23).



FIG. 2. — *Dirham*. Mint: al-Abbasiya, date: 150 AH/767 AD. This *dirham* is from the first year of production and is a transitional issue without a governor's name. (American Numismatic Society: 1972. 79. 285).



FIG. 3. — *Dirham*. Mint: al-Abbasiya, date: 151 AH/768 AD. The name of the first Muhallabid governor 'Umar b. Hafṣ ('Umar) appears below the reverse margin. (American Numismatic Society: 1956. 137. 14).



FIG. 4. — *Dirham*. Mint: al-Abbasiya, date: 156 AH/772 AD. The name of 'Umar's cousin and successor, Yazid b. Hätim, has replaced 'Umar's name on the reverse (Yazid). (American Numismatic Society: 1917. 215. 530).

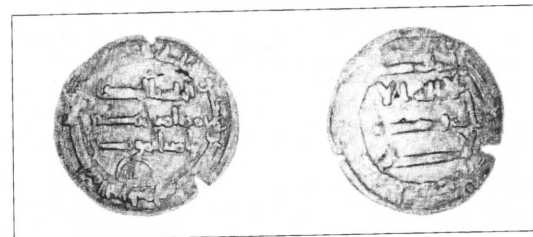


FIG. 5. — *Dirham*. Mint: al-Abbasiya, date: 161 AH/777 AD. Another example of *dirham*-s struck during the governorship of Yazid b. Hätim. The reverse inscription is:

الخليفة المهدي / مما امر به هرون / بن امير المومنين

(American Numismatic Society: 1972. 169. 87).



FIG. 6. — *Dirham*. Mint: al-Abbasiya, date: 166 AH/782-783 AD. Reverse inscription:

محمد رسول / الله صلى الله / عليه وسلم

(Courtesy of the Trustees of the British Museum, BM 1972. 11. 8. 45).



FIG. 7. — *Dirham*. Mint: Harūnabad 169. Reverse inscription:

الخليفة المهدي / مما امر به هرون / بن امير المومنين

(Courtesy of the Trustees of the British Museum, *British Museum Catalogue* 132 n).

whether or not the silver of North African *dirham*-s showed trace patterns substantially different from the silver used in mints in the east and Spain as well as any differences with *dirham*-s minted prior to and after the period under question, the last quarter of the eighth century. To answer these questions, we took approximately 600 samples for neutron activation analysis (NAA) at the American Numismatic Society. Neutron activation analysis is a method of accurately ascertaining the metallic fineness of coins, both the fineness intended by the moneymakers as well as the unintended fineness represented by impurities in the metal. It was this latter unbiased data which we were after. Any marked difference would indicate an alternative source of silver bullion.

Neutron activation analysis bombards minute samples from the coins with neutrons to make a tiny fraction of the atoms radioactive²³. Based on the *types* of radioactive atoms produced, it is possible to say what chemical elements are present. The *intensities* of the radiation emitted make it possible to say how much of a chemical element is present. The most significant impurity associated with silver is gold. What is important is not the percentage of gold but the amount of gold *relative* to that of silver. This ratio is reported as $\mu\text{mg AU}/100 \text{ mg AG}$, in effect, the weight % gold per 100 weight % silver²⁴. The gold content of silver coins is usually less than one percent and apparently its presence was unknown to the ancient minters. To the modern scientist, however, this impurity is a source of unbiased data and provides a means of distinguishing between the silver sources used for coinage. The corollary is that the ratio of gold impurity contained in the *dirham* was roughly equal to that of the original ore. The refining process did not affect the level of gold impurity because the chemical behaviour of gold and silver is the same. Therefore, by determining the percentage of gold impurity, that is percentage of gold to silver, in a group of coins we can determine whether or not the silver contained in those coins came from a single source.

The results of these NAA tests appear in tables III-XVI. The top graph illustrates the fineness of silver while the bottom refers to the percentage of gold impurity to silver. It is this trace element which is detected by the neutron activation analysis. Tables III-VIII refer to North African mints. The conclusions should be interpreted with caution since there were more samples available for some mints than for others (see table II), specifically the more prolific mints of al-'Abbāsiya, Ifriqiya and al-Andalus. Until we come to the mid-160s, the silver displays a consistent and high

²³For a fuller discussion of the technique and application of NAA see A. A. and J. P. GORDUS, 'Identification of Potosí Silver Usage in Sixteenth-Seventeenth Century European Coinage through Gold-Impurity Content of Coins', *Coinage of the Americas Conference at the American Numismatic Society*, New York, 1989, p. 22-42. See also A. A. GORDUS, 'Neutron Activation Analysis of Coins and Coin Streaks', in E. T. HALL and D. M. METCALF (eds.), *Methods of Chemical and Metallurgical Investigation of Ancient Coinage (= Methods of Chemical)*, London, 1972, p. 127-148. Also see by the same author 'Neutron Activation Analysis of Archaeological Artifacts', Proceedings of a symposium on the *Impact of Natural Sciences on Archaeology*, London, 1969; 'Non-Destructive Analysis of Parthian, Sasanian, and Umayyad Silver Coins', in D. KOUMJIAN (ed.), *Near Eastern Numismatics, Iconography, Epigraphy and History: Studies in Honor of George C. Miles*, Beirut, 1974, p. 141 and ss.; P. MEYERS, 'Activation Analysis Methods applied to Coins: A Review', in *Methods of Chemical*, p. 183.

²⁴*Ibidem*.

standard of purity. Immediately apparent is the distinction between North African and Iraqī fineness as illustrated in tables XV-XVI. The neutron activation analysis supports our contention that silver minted in North Africa is distinct from that minted in Iraq.

Tables XII to XIV offer a broader chronological view, including Umayyad issues from Ifriqiya, al-Mubāraka and al-Andalus. The percentage of gold impurity is markedly different for the earlier issues, thus supporting the argument that under the Muhallabid governors new sources of silver came into mint production. Perhaps it will not come as a surprise to the participants of this workshop that those coins tested from al-Andalus are similar in fineness to those from North Africa. It suggests that the Spanish Umayyad *amir* was able to make his mint attractive enough *commercially* to divert some of the North African silver²⁵.

Finally, tables V and VII show North African mint production after our period and suggest that the silver source may have been the same as during the great *dirham* boom of the 160s and 170s.

It's apparent from the tables that the gold-silver ratios in each series of coins minted during the same period and in the same general geographic region tend to cluster into groups of values which probably reflects the gold impurity level in the original silver ore. Apparently each silver source, or perhaps even vein of silver, tended to have a relatively constant gold: silver level and this was reflected in the coined silver. As data on additional coins were obtained these clusterings frequently became even more apparent as with the additional data on Umayyad issues.

In conclusion, it does not seem unreasonable to propose a link between intense mint production and increased exportation of slaves from the *Bilād al-Sūdān* to the 'Abbasid east. Tying the two ends together we find the Muhallabids, especially, Yazid b. Ḥatim, as agents of the state.

The numismatic evidence has been crucial in establishing the continued link between the Muhallabids and Ibādiya. Initially, all I had was the knowledge that there had been a long-standing relationship which though interesting offered a weak explanation for Yazid b. Ḥatim's remarkable rapport with the Berber insurgents. The coin evidence, by its sheer quantity, is compelling.

Thus from the 'ground-up', at the micro-level one can begin to propose conclusions with more general implications. The caliphate, for example, was remote and its authority could only be maintained through collaboration between their representative and the local elites, in this case, the Muhallabids and the Ibādiya and Ṣufriya. In the 150s-170s AH North African Berbers, in particular the Ibādiya and controlled inland trade routes and markets, monopolised the slave trade and important sources of silver. By this means they influenced a significant percentage of *dirham* production for the Empire through their mint cities of al-'Abbāsiya and Ifriqiya.

²⁵Again, I thank Michael Bates for his help on this point.

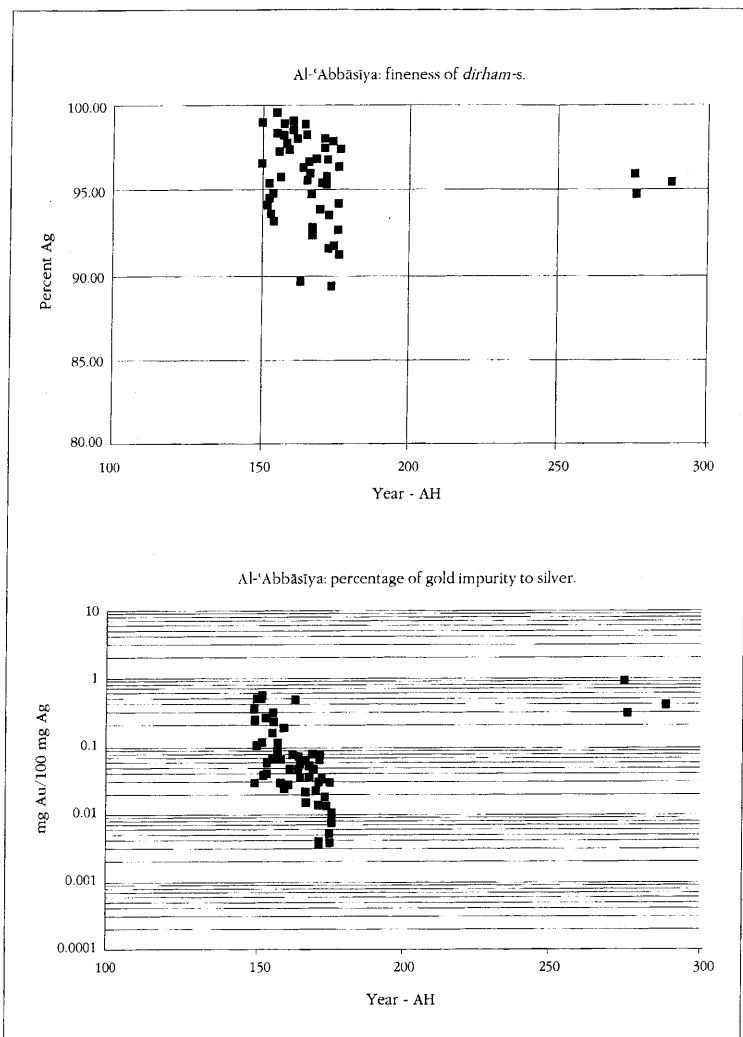


TABLE III

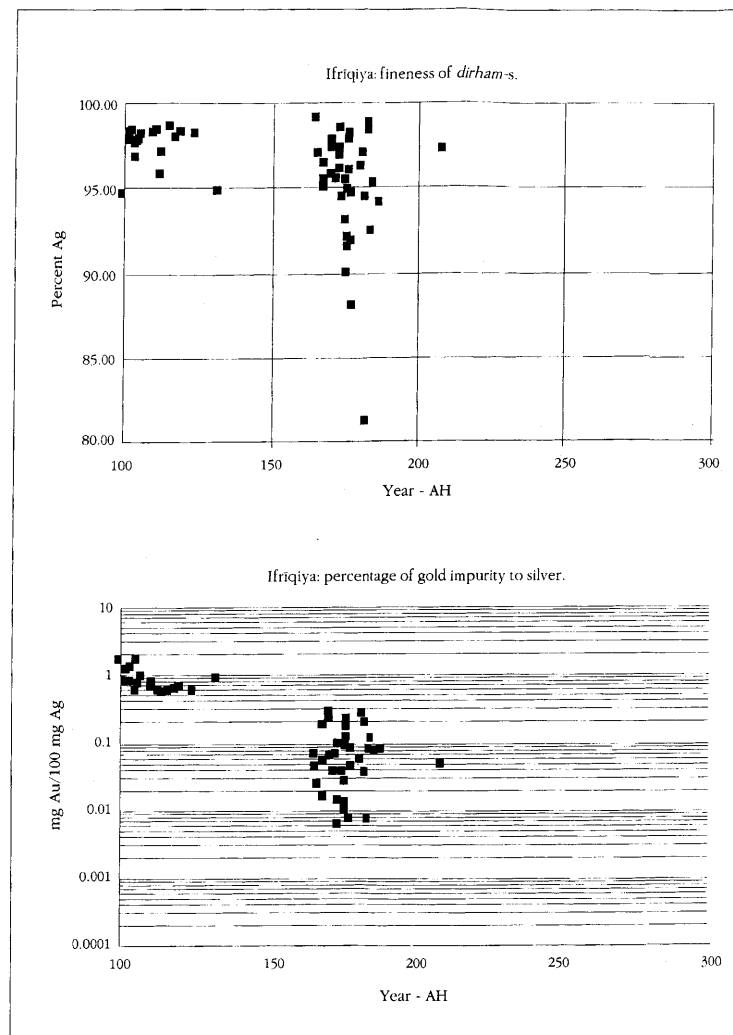


TABLE IV

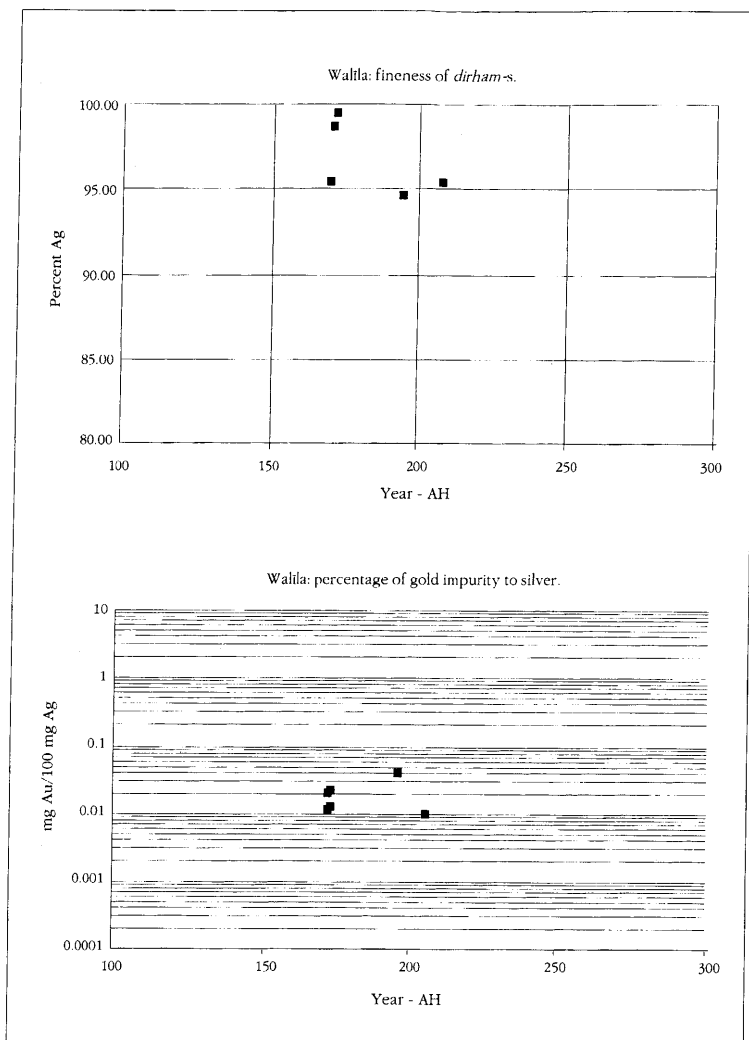


TABLE V

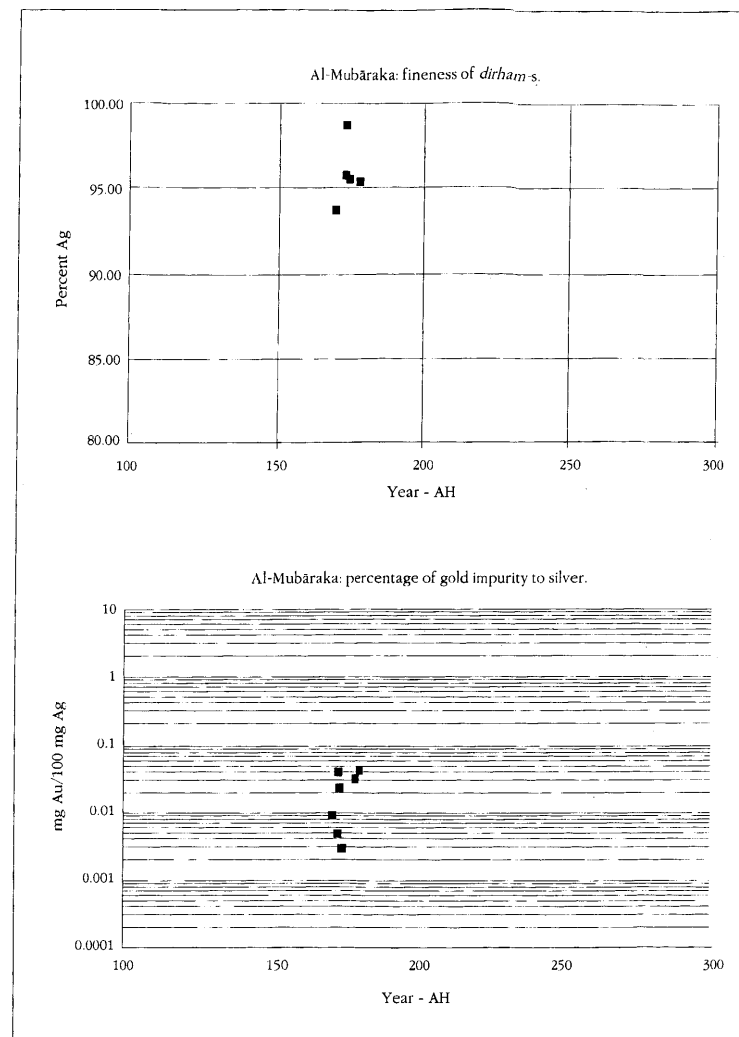


TABLE VI

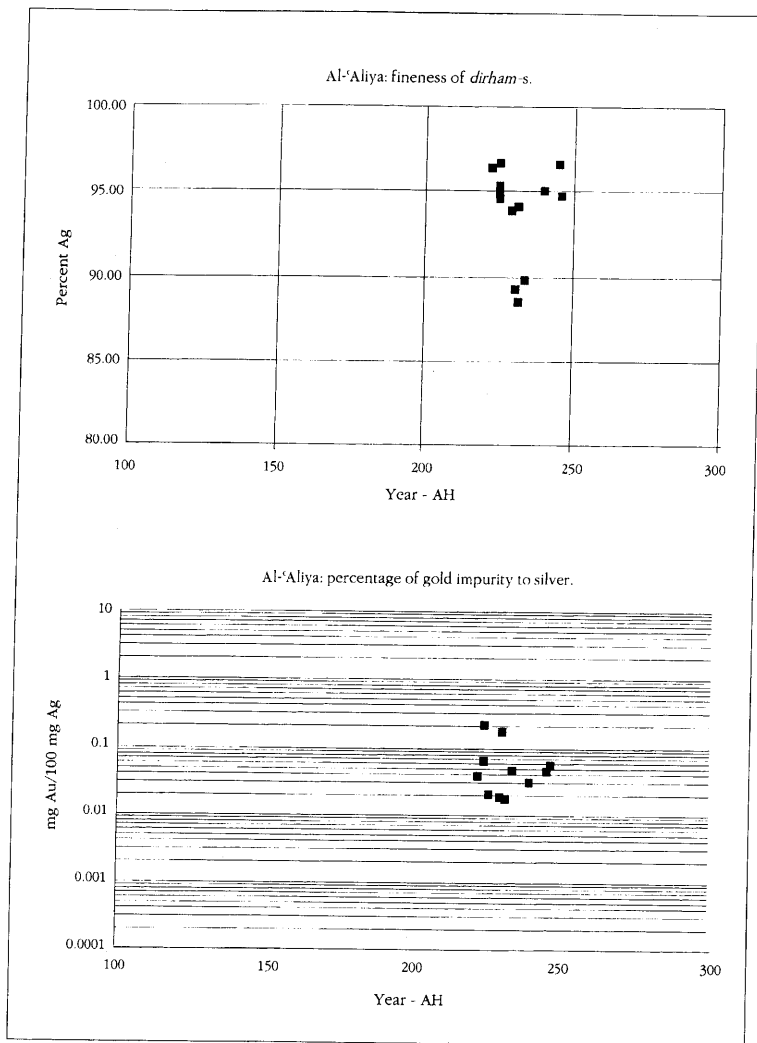


TABLE VII

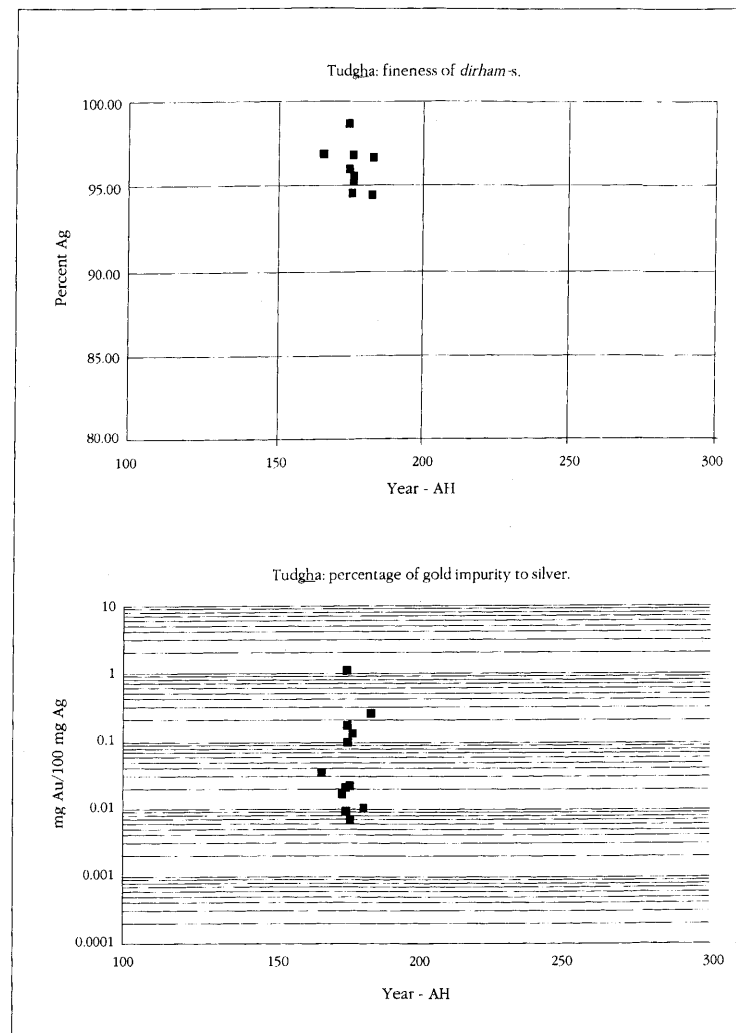


TABLE VIII

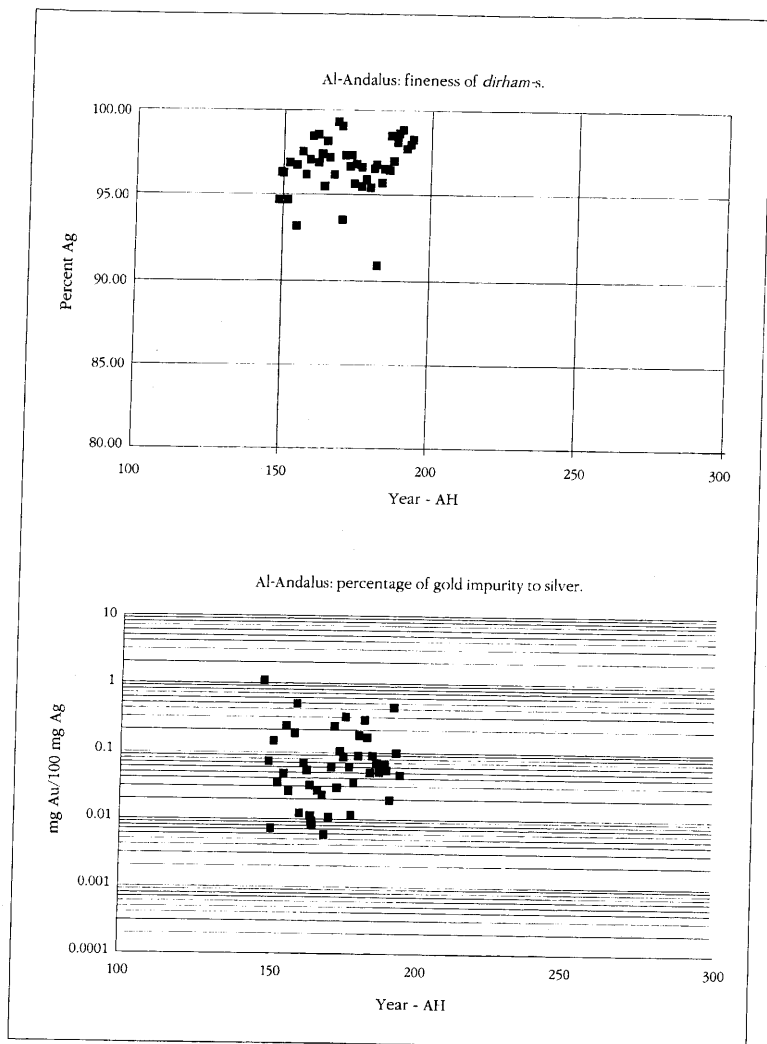


TABLE IX

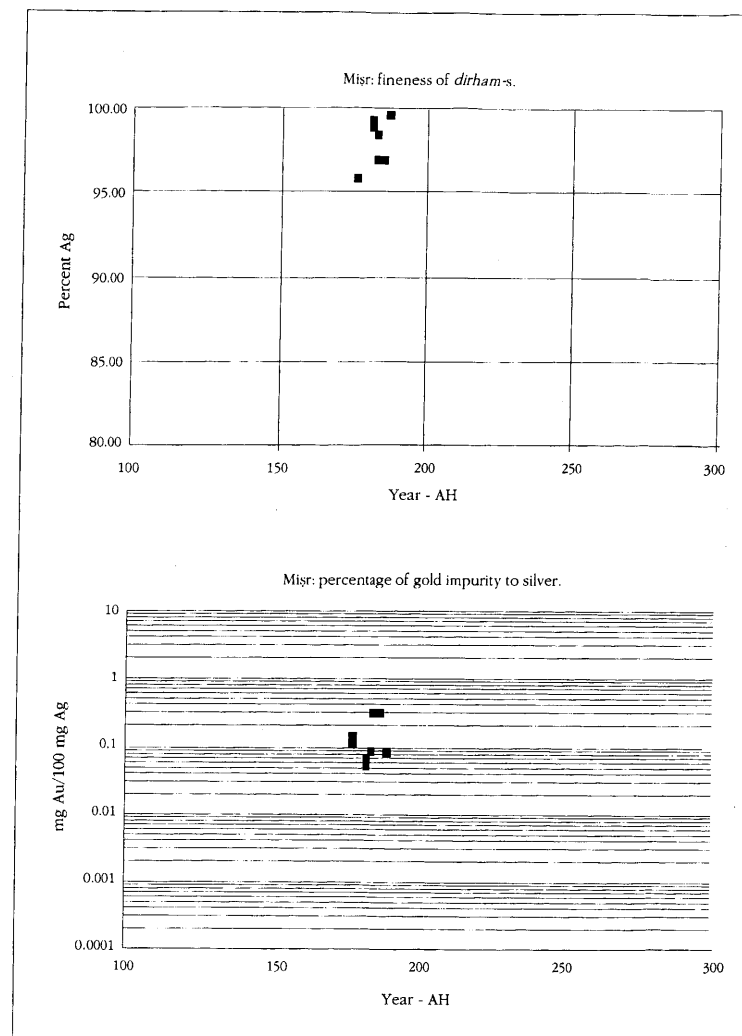


TABLE X

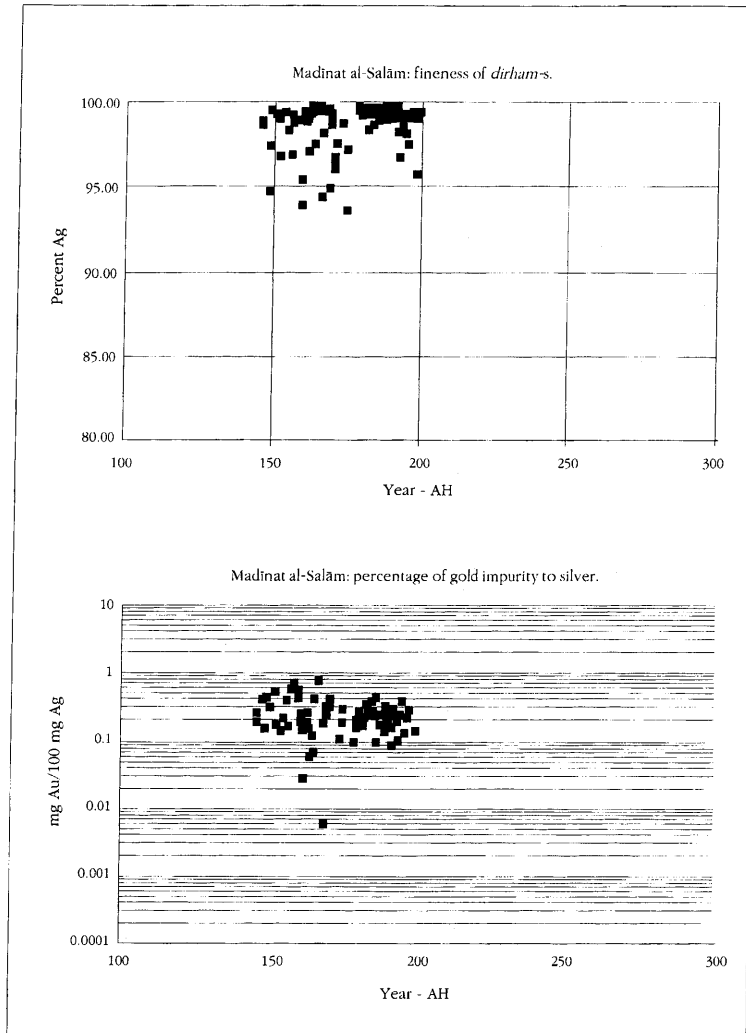


TABLE XI

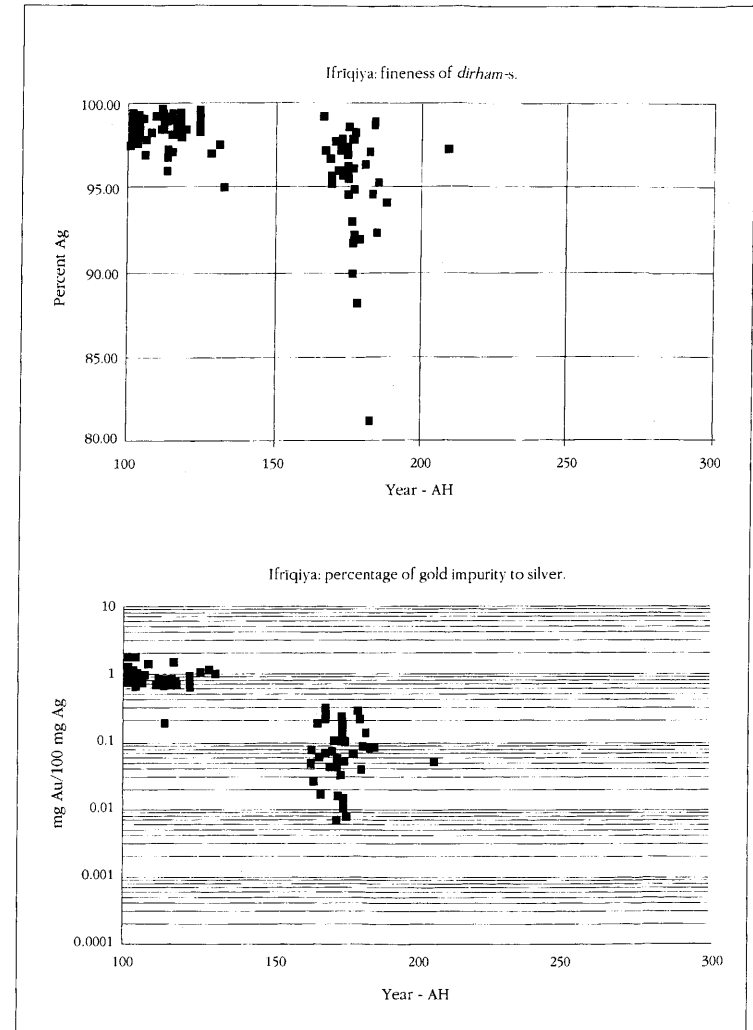


TABLE XII. — Comparison of Umayyad and early 'Abbasid issues (Ifriqiya).

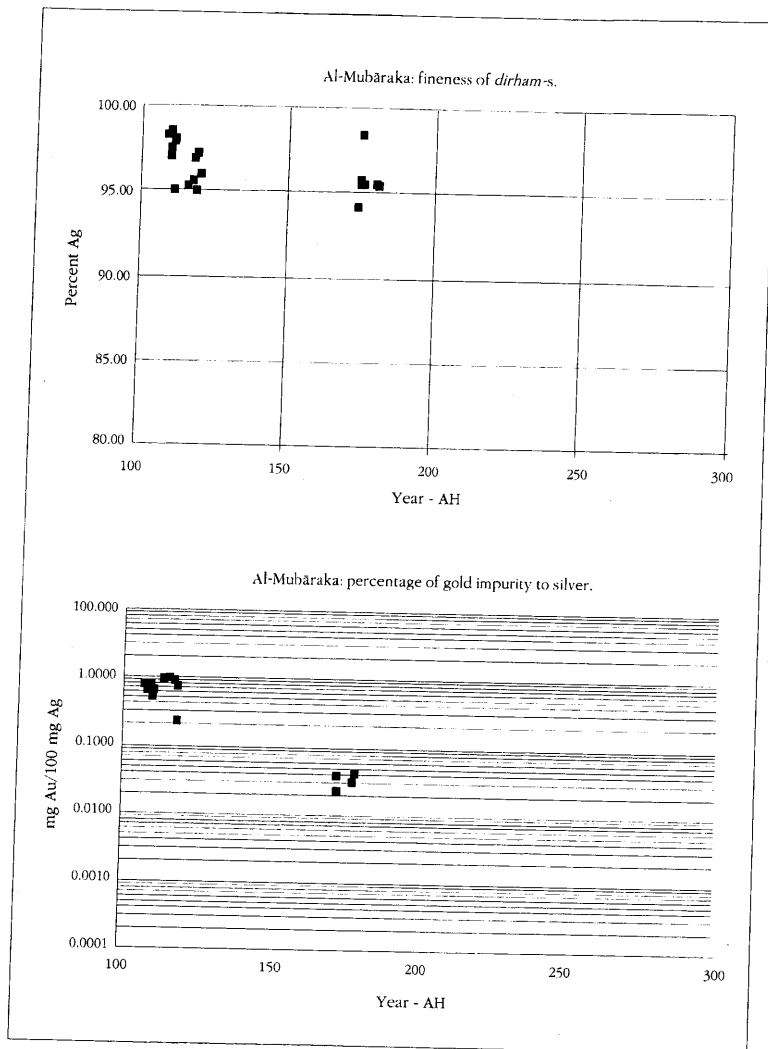


TABLE XIII. — Comparison of Umayyad and early 'Abbāsīd issues (al-Mubāraka).

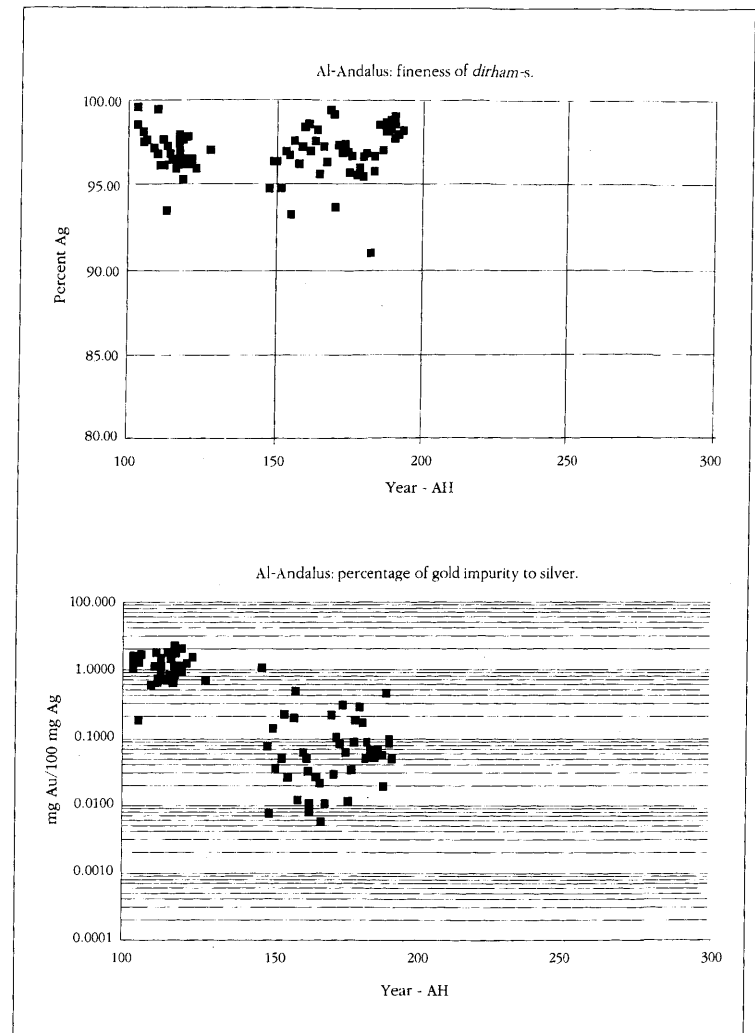


TABLE XIV. — Comparison of Umayyad and early 'Abbāsīd issues (al-Andalus).

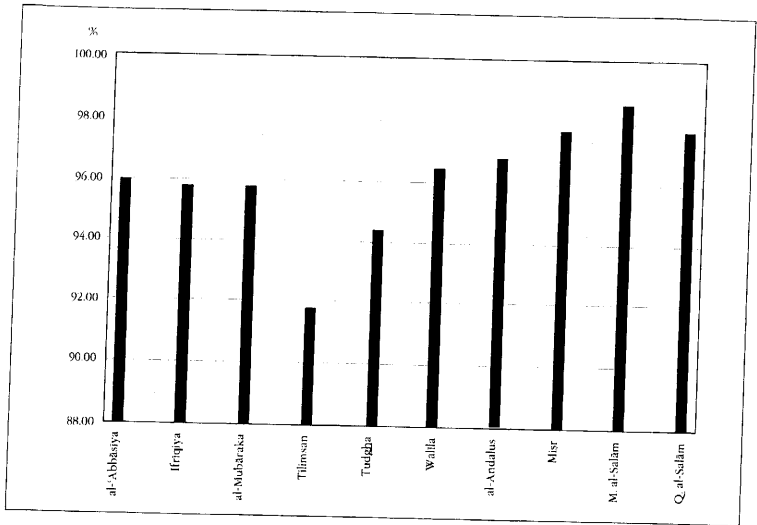


TABLE XV. — Silver fineness % Ag.

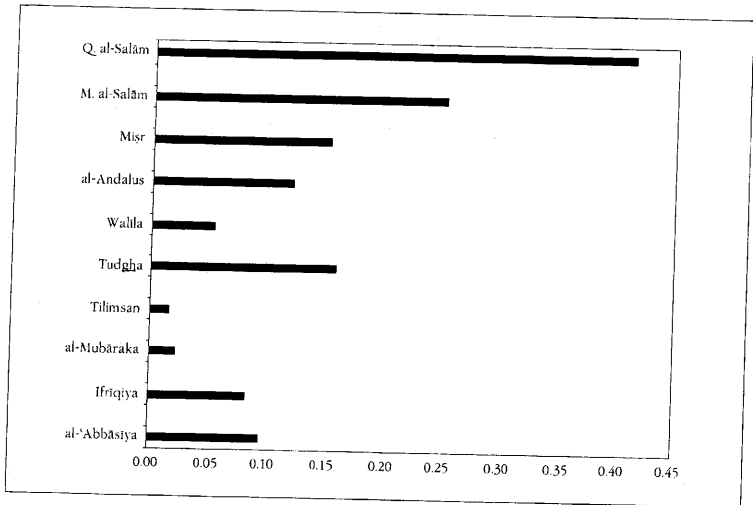


TABLE XVI. — Gold trace elements: mg Au/100 mg Ag.