

**Corrected Attribution of the ‘Coinex’ Hoard, (CH 8, 413);
Reform of Ptolemaic Bronze Coins during the Reign of Ptolemy VI with
Cleopatra I (180-176) and Cleopatra II (176-170)**

(Plates 1-2)

Richard Pincock

Details of a 1992 hoard of Ptolemaic bronze coins (i.e., the ‘Coinex’ hoard) have recently been published with an interpretation¹ that gives very significant changes in accepted dates of several types of coins. The major change is that coins (Sv1423) previously attributed to Ptolemy VI with co-regent Ptolemy VIII (170-164) were reattributed² as much as thirty-four years earlier to Ptolemy IV just before his death in 204 or to Ptolemy V early in his reign. Similar coins (Sv1424) were also moved from Ptolemy VI after 170 into the reign of Ptolemy V (204-180).

Moreover, the hoard was presented as closely related to third century hoards and interpreted to indicate that an official reform of bronze coinage must have occurred late in the reign of Ptolemy IV, shortly before a revolt in upper Egypt that began c.207.³ It was concluded that an episode of countermarking during the time of Ptolemy IV revalidated part of the coinage of Ptolemy IV, namely those coins of c.45 g weight.⁴

However, as shown below, the Coinex hoard, as a post-reform hoard, is fundamentally different from third century (pre-reform) hoards and the Huston-Lorber (hereafter H-L) method of analysis of the hoard is inappropriate for use when a monetary reform has occurred. This is because a monetary reform that revalidates earlier coins also redates those coins; the original attributions of the reformed coins in the hoard no longer apply. For example, the countermarked coins originating in the time of Ptolemy IV should not simply be treated as coins of Ptolemy IV; after being countermarked they belong to the time when the countermarks were applied, which may be many years later than originally produced.

In addition, the assignment by H-L of coins Sv1423-4 to Ptolemy IV and Ptolemy V produced several anomalies that indicate that these coins and also the countermarked coins of Ptolemy IV were chronologically misplaced. The following review of the hoard contents (Parts I and II) leads to attributions (Part III) that give good evidence that the monetary reform occurred, not c.207 under Ptolemy IV (221-204), but instead under Ptolemy VI during 180-170. The results are consistent with countermark,⁵ weight, style and type correlations to various other coins of Ptolemy VI and with documentary evidence of an economic reform during 180-170 (Part IV). Dating to 180-170 is also consistent with the evidence and attributions gained from hoards studied by Thompson (Corinth hoard)⁶ and by Price (Saqqâra hoard F).⁷

I. Hoard Contents and Relative Chronology. The Coinex hoard is a “savings hoard”⁸ in which mainly the largest available bronzes were gathered. The coins in question are medium size bronzes with a Zeus-Ammon obverse (a few with laureate Zeus) and a reverse legend ΠΤΟΛΕΜΑΙΟΥ ΒΑΣΙΛΕΩΣ. They are described below with numbers from the H-L listing² and with the corrected attributions given in italics.

H-L nos. 1-3: Issues of Ptolemy II;⁹ weights 46.01, 20.95, 22.11 g similar to other coins in the hoard but without cornucopia symbols; one eagle reverses.

H-L nos. 4-41: *Original issues of Ptolemy III, revalidated by a later reform in the time of Ptolemy VI*, all with cornucopia symbol on the reverse at the lower left or upper right field (above the shoulder of the eagle); c.45 g for H-L nos. 4-7, 16-34, 41; c.32 g for H-L nos. 8-12; and c.16 g for H-L nos. 13-15, 35-40, one eagle reverses; (see Plates 1-2, nos. 5, 6 and 7).

The following four types of coins were reattributed by H-L.

- 1) H-L nos. 42-62: *Original issues of Ptolemy IV, revalidated by countermarking at a later reform in the time of Ptolemy VI*, all of weights c.45 g and all countermarked with a cornucopia symbol in the reverse lower left field, one eagle reverses (see Plate 1, n. 1). By disregarding the redating caused by the overstriking of a countermark, H-L attributed these coins as “Early to middle issues of Ptolemy IV”.²
- 2) H-L nos. 63-93 = a variety of Sv1423: *Issues of Ptolemy VI with Cleopatra I (180-176) produced shortly after the monetary reform*, weights c.40 g, the obverses show a “large-horn Ammon” with an unusual style of Zeus having a large horn beginning at the hairline or above the forehead. The reverses show two eagles facing left (see Plate 1, n. 2). H-L attributed these coins as “Late issues of Ptolemy IV or early issues of Ptolemy V”.²
- 3) and 4) H-L nos. 94-98 and 99-161 = Sv1423 and 1424: *Later issues of Ptolemy VI with Cleopatra II, (176-170)*; weights c.40 and 29 g, respectively; standard Ammon obverses with two-eagle reverses, the latter type with a double cornucopia in the lower left field (see Plate 1, nos. 3 and 4). H-L attributed these coins as “Issues of Ptolemy V”.²

Table 1 lists the hoard contents by H-L numbers (col. one), the Svoronos numbers (col. two) and gives the two different attributions, i.e., the H-L assignments (col. three) and the corrected assignments given here (col. four). The relative chronology given in the H-L list of the hoard² (Table 1, col. 1) is not in question. However, the absolute chronology of the hoard and the attributions to Ptolemy IV and Ptolemy V given by H-L are questioned and corrected. The four types of coins in question are shown in Plate 1 (nos. 1 to 4) and are referred to below as H-L1, H-L2, H-L3 and H-L4.

Table 1. Attributions of the ‘Coinex’ Hoard according to Huston-Lorber² and according to the Corrected Attributions.

Hoard Contents		Attributions	
List Number, ^a (Total of Coins)	Description (Svoronos nos.)	Assignments by Huston-Lorber ^a	Corrected Assignments
nos. 1-3, (3)	(Sv 448,449B,465)	Ptolemy II ^p	revalidated by Ptolemy VI with Cleopatra I ^b ,
nos. 4-41, (38)	(Sv 974-5,1166-9)	Ptolemy III	
nos. 42-62, (21), H-L type 1	counter marked ^c coins of Ptolemy IV ^d	early to middle Ptolemy IV	revalidated by Ptolemy VI with Cleopatra I ^{c, f}
nos. 63-93, (31), H-L type 2	Ptolemy VI & VIII (Sv 1423v ^e)	late Ptolemy IV or early Ptolemy V	Ptolemy VI, 180-176, with Cleopatra I ^f
nos. 94-161 ^g , (68), H-L types 3, 4	Ptolemy VI & VIII (Sv 1423, 1424)	Ptolemy V, i.e., before 180	Ptolemy VI, 176-170, with Cleopatra II ^f

^a By Huston-Lorber list numbers and their descriptive titles, see H-L, ‘Hoard’, p. 12-18.

^b Coins of Ptolemy III, 45, 32 and 16 g, were valid for circulation after the monetary reform by virtue of their weight, size, and type (cornucopia symbols in reverse right or left field).

^c Coins of Ptolemy IV, 45 g, were revalidated for circulation after a monetary reform in the time of Ptolemy VI (with Cleopatra I, 180-176) by countermarking with a cornucopia symbol in the reverse left field.

^d Original coins are Sv1140, 1142, 1145, 1148, and 1149, all those in the hoard were countermarked.

^e Large horn Ammon variety.

^f Countermarked coins of Pt IV (H-L1) and large-horn Ammons (H-L2) are attributed to the time (180-176) of Ptolemy VI with Cleopatra I; H-L3 and 4 are attributed to Ptolemy VI with Cleopatra II, 175-170. The voluminous production of type H-L4 = Sv1424 probably continued past 170.

^g In addition, three small coins of the period were present, i.e., nos. 162-4, also see ref. 9.

II. Post-Reform Character of the Hoard. It is important to recognize, as described below, that all of the coins in the hoard were affected by a monetary reform and that all the coins in the hoard were valid according to the conditions of the reform. New coins (nos. 63-163) were created by the reform while changes in physical characteristics (countermarks and weight distribution) of coins nos. 1-62 show that older coins were revalidated at the time of the reform. Revalidation of earlier coins changes their chronology, their original dates no longer apply and the old original dates cannot be used to determine the date of the reform.

The general result of the following review is that all the coins in the hoard were either reform coins (nos. 1 to 62) or post-reform coins (nos. 63 to 163) and all should be chronologically treated as validated for circulation by the monetary reform. In contrast (see Appendix A), while H-L recognized coins nos. 63-163 as post-reform, they treated coins nos. 1-62 as if they were *pre*-reform, i.e., as if they had not been changed (either physically or chronologically) by the reform.

The Coinex hoard contains 38 coins of Ptolemy III (H-L nos. 4-41), originally produced between 246-221, all consistent in weight (45 g or less) and in distinctive marking (cornucopia symbol) with the weights and cornucopia marks on coins in circulation after the reform.⁹ The 21 coins of Ptolemy IV (H-L nos. 42-62= H-L1), originally produced between 221-204, also conform (when validated by a cornucopia countermark) to the weight requirements of the reform. Continuing according to the relative chronology of the hoard, the two-eagle coins (H-L nos. 63-161=H-L2,3,4) were produced shortly after the episode of countermarking; they are an initial part of a new and extensive series in several weights (Sv1423-1428). The overall view of relative chronological order in the hoard is that coins nos. 1 to 62 are official reform coins made valid for circulation by the monetary reform, while coins nos. 63-163 (=H-L2,3,4) follow closely as post-reform coins produced shortly after the time of reform.

The evidence that the hoard contains only coins valid under the reform comes not only from the countermarks on coins nos. 41-62 but also from the weight distribution of the coins (nos. 1-41) that originated with Ptolemy II and Ptolemy III. The weight distribution in the Coinex hoard is distinctly different from those distributions for third century hoards¹⁰ that were closed earlier and were not affected by any monetary reform. Third century hoards closing in the time of Ptolemy IV (before any monetary reform) have weight distributions for coins of Ptolemy II and Ptolemy III of modules¹¹ 96, 72, 48, 36 g, respectively, as follows: for the Newell hoard, 40%, 34%, 21%, 5% (total number of coins for both Ptolemies is 38); for the Getty hoard, 17%, 28%, 45%, 10% (total 64); and for the Ramesseum hoard 13%, 26%, 45%, 16% (total 31).¹² The corresponding weight distribution of coins of Ptolemies II and III in the Coinex hoard is 0%, 0%, 83% and 17% (total 30), i.e., the coins of both 96 and 72 g for Ptolemy II and Ptolemy III, found as important components in pre-reform hoards, are completely absent from the Coinex hoard.

If the Coinex hoard were related to pre-reform third century hoards it would have a distribution of coins that includes the modules 96, 72, 48 and 36 g (as is the case with the Newell, Getty, and Ramesseum hoards). The observed result, namely that the hoard contains not a single coin of 96 and 72 g modules, would be extremely unlikely (and essentially impossible for a pre-reform savings hoard where the largest available coins are chosen). The observed weight distribution is therefore significant and shows that the coins in circulation at the time of assembly of the hoard involved no examples of modules 96 or 72 g. The distribution (and the countermarks) also show that the hoard should be treated as containing either reform coins or post-reform coins (i.e., none are simply pre-reform).

The apparent action of the hoarder also indicates that the hoard contains only coins that were valid after the reform; i.e., since the hoard was a “savings”⁸ and it was deposited after the reform, the hoarder would have chosen only those coins that had value (likely a new value) according to the reform. Thus, all coins in the hoard that originate earlier than the reform (nos. 1 to 62) were revalidated by the reform; they are no longer pre-reform, they are now coins consistent with the reform. Otherwise the hoarder would not have saved them.

The general conclusion from the weight distribution of the coins saved in the hoard is that they reflect a time after the reform when these heaviest coins of Ptolemies II, III and also IV were officially invalid and/or unavailable. Thus, while coins of c.45, 32, 16 g of Ptolemies III and IV (all with a cornucopia symbol as in the hoard) were in circulation after the reform,¹³ the absent coins of modules 96 and 72 g had been demonetized by the reform. These, no doubt, were withdrawn and melted to supply at least a part of the metal used to produce the much lighter post-reform coins such as H-L2,3,4.¹⁴ This absence of large coins of the third century in second century Ptolemaic hoards was first noted by Milne¹⁵; he recognized that this “break” was evidence that a monetary reform had occurred and he placed the date before c.182.¹⁶

The result of this break is that the monetary reform not only causes absences of certain earlier coins but it also causes a shift in chronology of coins; e.g., the application of a countermark redates coins from the time of original striking (indicated by the initial type of coin) to the time of application of the overstrike (the countermark).¹⁷ Contrary to the method of H-L, the *original* dates of the coins can no longer be used to establish the chronology of the post-reform hoard.

The shift in chronology when a monetary reform has occurred makes the use of the conventional method of hoard analysis unsuitable for determining dates of coins inside the hoard (while, of course, it is suitable for third century hoards that do not

involve a reform, i.e., the Newell, Getty, and Ramesseum hoards).¹⁰ The H-L analysis of the Coinex hoard is unsuitable because it is based on original (i.e., pre-reform) dates for coins and the H-L method does not take into consideration that a later countermarking or revalidation changes the chronology of the coins. (See Appendix A for details of the H-L treatment of the hoard.)

From the inadequate method of H-L, the date for the monetary reform would be given incorrectly and that date would be too early. An incorrect date is likely to result in inconsistencies with what is otherwise known about the types of coins in the hoard. Several such anomalies are created by the H-L assignments; these all indicate that the H-L attributions are too early by about 25 years (see details in Appendix B).

The date of the reform (the date of the *overtyp*e countermark) cannot be correctly determined by the method of H-L that involves the date of application of the *undertyp*e on the original flans. On the other hand, the date of the reform can be determined from what is known about the overstruck countermark.

III. Corrected Attributions. The countermarks on coins of Ptolemy IV in the hoard (nos. 42-62) are the most obvious indication of the monetary reform. Fortunately, the countermark is known to occur on other coins of the period. These allow a method of dating of the reform (and the hoard) that does not use pre-reform dating, assumptions of a relationship to a historical event, or any arguments from absence.

Since the countermark denotes reform coinage, the date of the monetary reform is established when the date of application of the countermark is determined. A date after which a countermark was applied (i.e., a *terminus post quem*) can be obtained from the date of the latest coin countermarked.¹⁸ There are examples of several different types of coins (not in the hoard) that were countermarked, like those in the hoard, with a cornucopia symbol on the reverse lower left. Noeske¹⁹ reports an example of a cornucopia countermark in the reverse left field of an Isis head coin (Sv1233 = SNG *Cop.* 246-248). It is generally agreed¹⁹ that this coin originated with Ptolemy V and therefore was produced between 204-180. The cornucopia countermark on this coin of Ptolemy V could not have been applied before the time of Ptolemy V (204-180). This is good evidence that the monetary reform did not occur c.207; such dating would impossibly place the time of countermarking before the time of production of the coin that received the countermark.

Other cornucopia-countermarked coins, from the attribution of the Saqqâra hoard by Price,²⁰ indicate that the countermarking occurred *later* than the time of Ptolemy V and probably in the time of Ptolemy VI with Cleopatra I (180-176). Six examples of Sv1375 (Ammon/one eagle, c.19 g) were found in Saqqâra hoard F, each with a cornucopia countermark in the reverse left field. These coins were attributed to Ptolemy VI by Price;²² they are the latest coins that show the countermark. Noeske¹⁹, in his general study of Ptolemaic countermarks, assigned the date of the cornucopia countermarking to early in the reign of Ptolemy VI with Cleopatra I or shortly thereafter (i.e., 180-c.175). Thus the date of the reform is indicated by a *terminus post quem* of 180, i.e., the reform occurred after the beginning of the reign (in 180) of Ptolemy VI with his mother Cleopatra I as co-regent.

The hoard can also be dated from the chronology of the largest group (nos. 99-161) of coins in the hoard, H-L4 = Sv1424 (Plate 1, n. 4), that close the hoard. The date of these coins has been established several ways; by association in hoards, by style, by reverse type, and by the presence of a cornucopia in the dies (lower left reverse, as with the countermarks); [see Appendix B for details]. From the association of Sv1424 with a coin (Sv1380) that is undoubtedly a coin of Cleopatra I (180-176) in the Corinth hoard,²¹

Thompson attributed Sv1424 to Ptolemy VI with co-regent Ptolemy VIII (170-163). Coins Sv1380 with the name “Queen Cleopatra” (Plate 2, n. 10) are firmly dated to the short reign of Cleopatra I (180-176) while coins Sv1424, with slightly less weight yet with the same reverse type (two eagles) and cornucopia symbol, are later.²¹ Price, from Saqqâra hoard ‘F’,²² concluded that there can be “little doubt” that Sv1424 was produced somewhat before 170. Therefore, consistent with the hoard results of both Thompson and Price, the latest coins in the hoard (H-L3 and 4) are attributed to Ptolemy VI with Cleopatra II during 176-170 and the earlier large-horn Ammon coins (H-L2) are then reasonably attributed to the time (180-176) of Ptolemy VI with Cleopatra I (as given in Table 1, col. 4).²³

As shown above, the evidence from hoards (Corinth, Saqqâra and the Coinex hoard), from type similarities and countermarks, all point to the occurrence of a monetary reform involving the production of H-L1,2,3,4 *after* 180 rather than before 180 (i.e., in the time of Ptolemy VI rather than Ptolemy IV and Ptolemy V). The monetary reform began in the early part of the decade 180-170 and the coins in the hoard circulated in the time of Ptolemy VI with his co-regents Cleopatra I (his mother) and then Cleopatra II (his sister).

The only change necessary for current listings of Sv1423-4 in standard catalogues is an adjustment of their attribution from a beginning in 170 to a beginning a few years earlier, i.e., to c.175 (see Table I, col. 4), perhaps just after the death of Cleopatra I in 176. Such a modification in current catalogue attributions (e.g., such as SNG. Cop. 304-309 = Sv1423-4 that gives 170 for the beginning of these coins) is consistent with Price’s view that these coins should be placed somewhat before 170.²²

The hoard is closed by the type present in the greatest quantity (63 coins), i.e., by H-L4=Sv1424 which makes up 38 percent of the contents. These coins were produced in great numbers perhaps as part of the preparations for an attack on Syria leading to the Sixth Syrian war (170-168). The similarity of the Coinex hoard to the Saqqâra hoards²⁰ suggests a similar date of burial during the time of projected war with Syria or near the time of failure of the attack on Syria (c.170) and the resulting counter invasion of Egypt.²⁴ Since coins Sv1424-1426 are probably the most common ancient Egyptian coins (with 123 examples of Sv1424 listed in Svoronos), their production apparently occurred over a long period and continued into the time of the triple regency of Ptolemy VI, Cleopatra II and Ptolemy VIII, 170-163.

With the latest group in the hoard (H-L4=Sv1424, c.29 g) established in the time of Ptolemy VI with Cleopatra II (176-170), the earlier and heavier (c.40 g) coins of the same general type (H-L2,3=Sv1423) extend back into the time of Ptolemy VI with Cleopatra I. The episode of counter marking that initiates the monetary reform is then reasonably placed in the time of co-regency of Ptolemy VI with his mother Cleopatra I (180-176). As part of the reform, coins of Ptolemy IV, c.45 g (H-L1) were revalidated by countermarking (with a cornucopia in the lower left field) to relate them to coins with cornucopia symbols (also placed in the lower left field) that were produced extensively after the reform.²⁵ As shown in Part II, the remaining large coins (96 and 72 g) of Ptolemies II, III and IV were recalled and melted except for those near (and less than) the weight of the new large-horn Ammon coins (H-L2).

As described above (Part II), the presence of cornucopia marked coins (modules 48 g or less) of Ptolemy III (nos. 4-41) and countermarked coins of Ptolemy IV (nos. 42-62) arises from their official acceptance for circulation after the monetary reform. Such easy revalidation,^{17,26} by countermarking and use of selected earlier coins, gives an efficient and utilitarian continuation of part of the previous money supply in conjunction with the demonetization of 96 and 72 g modules and the initiation of the new coinage (H-L2,3,4).

How does such a monetary reform beginning early in the decade 180-170 fit with other data and views of that time?

IV. Monetary Renewal in 180-170. The occurrence of monetary reform in 180-170 was likely a consequence of the great “copper inflation” in the time of Ptolemy IV and continuing through the difficult²⁷ reign of Ptolemy V to 180. The inflation in prices and the depreciation in relative value of bronze coins during 220-180 would seem to require that coins be multiplied in quantity and probably increase in ‘face’ value as well.²⁸ A possible response to inflation by mint authorities²⁹ would have been to remove old large coins and convert them to many smaller coins³⁰ at a similar, or possibly even higher, value.²⁸ In the later inflationary time, during the reign of Ptolemy V (204-180), no large bronze coins similar to those of a previous standard were produced.¹³

The Coinex hoard is the best example³¹ of a hoard that illustrates the “break” caused by the monetary reform recognized by Milne.¹⁶ Price saw the break by the absence of coins of Ptolemy V in the Saqqâra hoards and he stated “There can be no doubt that systematic recalling of earlier issues was responsible for the sparse representation in these deposits of coins attributed to Ptolemy V”.³² The Coinex hoard is unusual in that it is a second century hoard containing some coins that originated in the third-century. Since these coins were revalidated for circulation by the monetary reform, this is consistent with Milne’s view of a break c.182. The break is due to systematic demonetization as well as revalidation in the second century, of certain coins that had been produced in the third century. The Coinex hoard contains coins of the period 180-170 and, since it contains coins from shortly after the reform, it presents valuable evidence on how demonetization, revalidation, and introduction of new coins occurred.

A monetary reform involving new types and weights of coins can be expected to be reflected in documents. Lorber³³ has reviewed the evidence gained from papyri and ostraka regarding the inflation that began in Egypt before c.220. Reekmans³⁴ and Maresch³⁵ also reviewed the financial and social difficulties continuing to the end of the Ptolemaic dynasty. These reviews cover extensive studies related to the great number of papyri containing information on prices and on various exchange values of silver and bronze. It is remarkable that this vast source does not give even a single example of the buying power of a known type of coin at any period.³⁶ Although many prices of commodities and services are known for various times, the relationships between prices and individual coins for such times are unknown. One authority has essentially said that the value of Ptolemaic bronze coins is unknowable.³⁷ Although this may be so for individual denominations, the relative value of bronze to silver is known at various times and there is therefore at least a generally recognized set of approximate times when changes occurred in the value of bronze relative to silver. The generally discussed view of dates and economic situations from 220 to 173 may be summarized (following Reekmans)³⁸ as follows:³⁹

a) *c.211-210*; when, following a period of rapid inflation from c.220, a “copper standard” was introduced where bronze was basically “cut loose” from silver, i.e., lost a fixed relationship to silver. Taxes could be paid in bronze instead of the earlier required silver coins and the economy of Egypt was increasingly isolated by internal social conflicts and further inflation.⁴⁰

b) *c.183-2*; when, after further increases in prices and wages, resumption of trade with the Mediterranean world occurred, and there was a related official depreciation of bronze relative to silver.⁴¹

c) *c.174-3*; when a further depreciation had occurred and a link between bronze and silver, i.e., a so-called “silver standard”, was re-established.⁴²

During the above changes from 220 to 173 the value of bronze relative to silver had depreciated by a factor of four in fifty years and people's confidence in bronze as storage of value was largely gone:⁴³ in the second century, relative to the third, bronze coins were seldom hoarded.⁴⁴

After 173, although inflation and other economic changes certainly occurred,⁴⁵ there seems to have been a relatively stable relationship of bronze to silver.⁴⁶ Cadell and Le Rider note that during the loss of parity between silver and bronze between 222 and 173, the price of wheat increased by a factor of 125 in fifty years. After c.173, from indications given by a first century papyrus, the price of wheat increased only 8.8 times in some hundred years.⁴⁷ Mørkholm points out that the monetary change of c.173 was "quite a sensible economic measure" that led to "negligible fluctuations [in the ratio of silver to bronze] maintained in Egypt through all the rest of the time of the Ptolemies until 31 B.C."⁴⁸

The Coinex hoard is chronologically related to the economic measures c.173 and, as described in Part II above, the contents of the hoard relate well to the previous inflationary background and to the resulting economic changes (including a monetary reform during 180-170). In the Coinex hoard examples of the heaviest (H-L3,4) of a new type of bronze coinage were found. They represent the beginnings of the very extensive coinage of the double eagle series in several weights (apparently five, perhaps more denominations, Sv1424-1428) thus establishing a coordinated series that would seem to be prerequisite for a renewed attempt to gain economic prosperity.

V. Conclusions. The currency reform therefore involved; 1) withdrawal of the largest remaining coins (modules 96, 72 g) of Ptolemies II, III, and IV;¹⁴ 2) validation of modules less than 48 g of Ptolemy III that show an original cornucopia; 3) validation of 45 g coins of Ptolemy IV (H-L1) by countermarking with a cornucopia; 4) the introduction of coins (H-L2, i.e., the new style large-horn Ammon two-eagle type) of a weight (c.40 g) that had been missing from production since the later time of Ptolemy IV and; 5) the beginning of production of the series of related two-eagle coins with normal Ammon head (H-L3 and 4 =Sv1423-4, part of the series Sv1423-8 in several denominations). All these point to a major renewal of the coinage that occurred during the 180-170 decade after a long period of inflation, revolt, and other social strife beginning c.207 and ending in 183. A period of recovery (183-170) after the general disruption from the social revolt of 207-183 gave rise to sufficient economic success in Egypt to allow those in power to initiate a war with Syria.²⁴ Rather than shortly before c.207 and *before* the beginning of the social disruptions of 207-183,¹ the period 180-170 *after* the disruptions seems a more appropriate and reasonable time for an official renewal of the currency. As shown above, evidence from the Coinex, Corinth and Saqqâra hoards, from weight distributions, countermarks, styles and from type correlations, all support a major monetary reform of bronze coinage that occurred in the time of Ptolemy VI with Cleopatra I (180-176) and Cleopatra II (176-170).

Appendix A. Errors in the H-L Treatment of the Hoard. As described in detail below, H-L's method of dating the Coinex coins divided the hoard into a part that is pre-reform (nos. 1-62) and a part that is post-reform (nos. 63-163). They then used their pre-reform chronology to establish their dating of the later coins in the hoard. However, such a division into unchanged pre-reform coins together with later post-reform coins is contrary to evidence from the hoard. There are differences in physical characteristics (weights and countermarks) of coins nos. 1 to 62 that makes it basically impossible for them to be simply pre-reform coins.

Validation of the coins in the Coinex hoard by the monetary reform is obvious from the presence of the countermarks (on coins 42-62) that revalidated the coins of Ptolemy IV at the time of the reform. A corresponding revalidation of the coins of Ptolemies II and III (nos. 1-41) is not so obvious if one only considers *individual* examples of coins present in the hoard. However, the weight distribution of these coins *as a group* (see Part II above) not only shows that the largest coins (modules 96 and 72 g) had been withdrawn and were unacceptable (i.e., demonetized), it also shows that certain coins (modules 48, 36, 18 g, i.e., nos. 1-41) were valid after the reform (i.e., revalidated by the reform). Therefore, hoard coins nos. 1-62 are valid reform coins that should be chronologically set to the date of the reform; the others in the hoard (nos. 63-163) were produced afterwards.

Moreover, the Coinex hoard was a “savings hoard”⁸ that was deposited after a monetary reform and, in order to have useful savings, the hoarder would have saved only those coins that had value according to the reform. Rather than being partly pre-reform coins, *all* of the coins in the hoard are reform coins validated at the time of the reform or they were produced after the reform; *none* of the coins in the hoard are simply pre-reform.

Thus, the basis for establishing the chronology of the hoard cannot be pre-reform dates but must be the date of the reform itself. However, as shown below, the method of H-L involves the use of pre-reform dating for coins 1-62 and this led to their incorrect chronology for the whole Coinex hoard.

H-L's Method of Dating of the Coinex Coins. The method used by H-L to determine the date of countermarking (and the attribution of the Coinex coins) has four parts. First, to establish their date of countermarking, they treated the countermarked coins (nos. 42-62 =H-L1) as if they were simply third century coins of Ptolemy IV,⁴⁹ i.e., they incorrectly treated the countermarked coins as if they had *not been* countermarked and they set their date to “Early to Middle Issues of Ptolemy IV”.⁵⁰ Secondly, because coins of Ptolemy IV *were* countermarked, and have as well many different control marks, they erroneously concluded that the episode of countermarking occurred late in the reign of Ptolemy IV (before his death in 204).⁵¹ Further, based on a presumed relationship of the countermarking with an incipient native revolt in upper Egypt, H-L state that this revolt provides a “terminus ad quem”,⁵¹ i.e., they concluded that the countermarking must have occurred shortly before the revolt of c.207-184.⁵² Finally, having set the countermarked coins (H-L1) to the time of Ptolemy IV and believing that the monetary reform occurred c.207, H-L distributed the chronologically adjacent coins (nos. 63-93=H-L2=large horn Ammon coins) to “Late Issues of Ptolemy IV or early Issues of Ptolemy V” (c.207-c.204) while the normal Ammon coins (nos. 94-161=H-L3 and 4) that closed the hoard were made to be “Issues of Ptolemy V” (204-180).²

However, while the episode of countermarking necessarily occurred sometime after the initial striking that took place during the reign of Ptolemy IV, there is no evidence for placing the countermarking of such coins *into* the reign of Ptolemy IV. Other than precedence, the initial date of the coins (determined from the undertype) has

nothing to do with the date of application of the countermark (the overstrike) which could be applied anytime later.^{17,18} The presence of various control marks in the undertype does not determine the date of application of an overstruck countermark. Furthermore, as shown in Part III above, evidence from the same countermark on other coins not in the hoard shows that the application of the countermarks occurred many years after the initial striking of the undertype by Ptolemy IV.

H-L assumed that the time of overstriking (application of the countermark) was very near to the time of initial striking of the coins (application of the undertype) in the reign of Ptolemy IV and came to their erroneous conclusion that the episode of countermarking was also in the time of Ptolemy IV. Unfortunately, it is a serious mistake to inconsistently treat the countermarked coins (nos. 42-62) as if they were unmarked (in order to set their date to the pre-reform time of Ptolemy IV) and then as marked (to assign the reform to the time of Ptolemy IV).⁵⁰ By treating the coins originating with Ptolemy IV (nos. 42-62) as if they had not been countermarked H-L neglected that the countermarking changed the date of these coins to the date of the reform. Also, H-L did not use the evidence from weight distribution of coins 1-41 that made them reform coins. Consequently, their treatment of coins 1-62 as if they were pre-reform (rather than products of the reform itself) led directly to erroneous dates for the countermarked coins (nos. 42-62=H-L1), for the monetary reform, and also for the later coins nos. 63-161 (=H-L2,3,4).

Furthermore, since an assumption is not evidence, H-L's assumption⁵¹ of a cause-and-effect connection between the revolt of c.207-184 and the episode of countermarking cannot be taken as evidence that the monetary reform occurred "very shortly before the revolt, c.207-206". H-L's attributions are based on the assumption that the countermarked coins were coins of Ptolemy IV and on the assumption that there was a relationship to a historical event that began in the time of Ptolemy IV. A circular argument then results when their presumed dating of the reform to late in the reign of Ptolemy IV is used in discussions of aspects of the reign of Ptolemy IV (and of Ptolemy V).⁵³

H-L also treated the hoard as if no "gaps" were possible, i.e., that at least a few coins of previous Ptolemies should always be represented in the hoard when coins of any later Ptolemy are present. However, when there has been a monetary reform that clearly systematically removed earlier coins and thereby created gaps, it is erroneous to apply the conventional expectation that there should be no gaps. The Coinex monetary reform not only redated coins but also withdrew others and thus necessarily created otherwise unexpected absences, i.e., gaps. Such gaps actually give evidence of the reform⁵⁴ (see Part V above).

Although there is a *real* gap in the hoard produced by the actual absence of unmarked coins of Ptolemy IV, this absence was perceived by H-L to be unacceptable and they closed up this authentic gap by assuming that the countermarking occurred in the time of Ptolemy IV. This misattribution had the effect of creating an artificial assignment for the countermarked coins under the title "Early to Middle Issues of Ptolemy IV". These coins should have been dated, not according to the undertype and thereby artificially filling in the actual absence of unmarked coins of Ptolemy IV, but according to the overstruck countermark (as given in Part III above).


The H-L method of analysis of the Coinex hoard is fundamentally flawed because it does not take into consideration that all of the coins in the hoard were affected by the reform. All of the hoard should be viewed from an after-the-reform perspective (as in Parts II, III, and IV above); this was the perspective of the hoarder who obviously deposited the hoard as a savings after the reform. A result of these errors is that the H-L

assignments of the hoard coins gave rise to conflicts with previous attributions determined from other hoards^{21, 22} and with various characteristics of the coins themselves (as reviewed in Appendix B below).

Appendix B. Anomalies Resulting from the H-L Attributions. The H-L assignments of H-L1,2,3,4 to Ptolemy IV and Ptolemy V (i.e., before 180) produced several types of anomalies, e.g., discrepancies from results gained from other hoards, from other occurrences of the cornucopia countermark, and from well established attributions of H-L2,3,4 to after 180.

From the presence of coins of the types of Ptolemy III and Ptolemy IV in the Coinex hoard, H-L assumed that the hoard was closely associated with hoards of the third century that closed in the time of Ptolemy IV. They stated that the Coinex hoard overlapped with late third-century hoards such as the Getty and Newell hoards and that it extended into the time of Ptolemy V.⁵⁵ However, only the erroneous assumption by H-L (see Appendix A) that the cornucopia countermark on coins of Ptolemy IV was applied in the time of Ptolemy IV produced the suggested overlap of coins in the Coinex hoard with coins in the Getty and Newell hoards. Since there are neither countermarked coins (H-L1) nor coins of types H-L2,3,4 (such as in the Coinex hoard) in third century hoards and since no unmarked coins of Ptolemy IV (such as in the third-century hoards) are in the Coinex hoard, there is no contiguous chronological relationship (no ‘overlap’) of the Coinex coins with third-century hoards. In addition, the absence from the Coinex hoard of coins of Ptolemies II, III, and IV that are greater than module 45 g and the general absence of coins of Ptolemy III and IV (unless they show a cornucopia) makes the Coinex hoard distinctly different from third-century hoards⁵⁶ (see Part II above).

H-L attribute Sv1424 (H-L4) to Ptolemy V (204-180) and state that the “production of the latest component of the Coinex hoard [H-L4]... may have begun as early as 200”.⁵⁷ Such a reassignment would move the production of these coins not only some ten to thirty years before the time of production of Sv1424 (as assigned according to other hoards), but also well before the time of production of other denominations in the series Sv1425-1428 that all have obverses and reverses identical to Sv1424.

The latest component in the hoard was designated by H-L as Sv1424-A (with mode c.29 g and diameter c.32-35 mm, see Plate 2, n. 8) and was divided by weight and size from examples not in the hoard designated by H-L as Sv1424-B (with mode c.23 g, c.28-30 mm, Plate 2, n. 9).⁵⁸ While Sv1424-A was said to be produced as early as 200, Sv1424-B was later.⁵⁸ H-L mention the relationship of Sv1424-B, by weight and size,⁵⁸ to coins of Queen Cleopatra I, co-regent with Ptolemy VI during 180-176 (Sv1380, average weight c.24 g, 28-32mm, see Plate 2, n. 10). The relationship of Sv1424-B to Sv1380 is very close, not just by weight and size, but also by reverse type (double eagles) and symbol (cornucopia). The close chronological relationship of Sv1424 to Sv1380 is also shown by combinations of cornucopia and monogram  between the legs of the eagle on the reverse right on coins Sv1380 and Sv1383 (see Plate 2, nos. 10, 11 and compare no. 9).

Thompson,²¹ firmly established Sv1380 (from the Corinth hoard) as a coin of Cleopatra I (i.e., during 180-176); she placed Sv1424 (without any distinction of A or B) later. From the Saqqâra hoard that closed c.170, Price assigned Sv1424 to somewhat before 170.⁵⁹ Illustrations referred to by H-L,⁶⁰ of examples of their two weight groups Sv1424-A and Sv1424-B (Plate 2, nos. 8, 9, respectively) show that, although different in size, they are virtually identical in style as well as type and symbol. With all the various similarities of Sv1424A and B (and of these with Sv1380), and considering the possibility of selection of heavier (larger) coins by the hoarder, the modal weights and sizes given by

H-L seem to be poor characteristics for them to divide Sv1424-A and B into two widely different times of production.⁶¹ It therefore seems very improbable that Sv1424-A in the Coinex hoard and Sv1424-B in the Corinth hoard were produced as much as 30 years (i.e., from 200 to 170) or even 10 years (from 180 to 170) apart. Since Sv1380 was produced during 180-176 and since there are identical types and symbols on the related coins Sv1383 and Sv1424 (see nos. 8, 9, 10, 11 in Plate 2) they were all produced near the same time and after 180. In summary, the evidence from both the Corinth and Saqqâra hoards and from reverse types and symbols all show that Sv1424 (both A and B) were produced after 180 rather than earlier.²³

To accommodate the H-L dating of the countermark to c.207, Lorber⁶² initially suggested two different episodes of countermarking, one for the Coinex hoard (c.207) and another for the Saqqâra hoards (attributed by Price to after 180). Later, in their Coinex article, H-L argued⁶³ that Price's assignment of the Saqqâra hoards was in error and the closure of all five of these hoards should be placed before 180 thus making one episode of countermarking at c.207.⁶⁴ The basis of the H-L argument for the re-assignment of the Saqqâra hoards to before 180 is that no examples of either Sv1380 or Sv1384, coins produced after 180, were present in the Coinex hoard or Saqqâra hoard F.⁶³ However, there are several very plausible reasons for the absence of coins Sv1380 and Sv1384⁶⁵ and such an argument from the absence of evidence can not be conclusive. The conclusion⁶³ by H-L, based on an "argument-*a-silentio*", that the "closure of these [Saqqâra] hoards can thus be dated with confidence to the reign of Ptolemy V [204-180]" is unwarranted.⁶⁶

There are still further indications that the assignment of coins H-L2,3,4 by H-L places them too early. Partially feathered legs appear on the Ptolemaic eagles of various coins H-L nos. 63-163= H-L2,3,4 in the hoard.⁶⁷ According to H-L, the Coinex bronzes (H-L2,3,4) reflect the transition during 207-180 of the eagles on bronze coins from partly feathered legs to more completely covered legs. Mørkholm⁶⁸ states that "shortly after 180 B.C., a new type of eagle appears on the coins with legs feathered right down to the claws" and "in Cyprus the new eagle type makes its appearance in 164/3". By the H-L attribution of H-L2,3,4 to before 180, the period for this transition in style is moved from the time of Ptolemy VI (i.e., after 180) to the time of Ptolemy V (204-180) and possibly to as early as 200.⁶³ In contradiction, H-L also state⁶⁷ that Mørkholm's date of after 180 is too *early* since several Alexandrian bronzes (Sv1380-2, 1383-6) and Cypriot silver coins produced after 180 have partially covered legs. Consistent with Mørkholm's view and the latter H-L view, it seems best to keep both the transition of style of feathers and the production of H-L2,3,4 to after 180.⁶⁹

Another anomaly, related to weight, is mentioned by Lorber, namely that the assignment by H-L of H-L2,3 (= Sv1423v,3) to Ptolemy V results in anomalous weights (c.40 g) for the time of Ptolemy V.⁷⁰ Finally, it should also be noted that there are three chronologically late coins (H-L nos. 162-4) in the hoard, two of which H-L placed before 180. These two (Sv1493) were assigned by Price to Ptolemy VI (after 180) from their presence in the Saqqâra hoard F; the last is unpublished.⁷¹

From an unsuitable method of dating, anomalous results are obtained; the above four different anomalous results (and others)^{64, 66, 69} are produced from the H-L method of dating of Coinex coins. These various anomalous results have one feature in common; they all indicate that the H-L datings of H-L1,2,3,4 are too early.

In summary, H-L obtained their date for the monetary reform (i.e., the date of application of the countermarks) from the *original* date of coins of Ptolemy IV.⁵⁰ However, the countermarked coins of Ptolemy IV are not coins of Ptolemy IV; they belong to the later time when they were countermarked. From other coins that show the same countermark, the time of countermarking cannot be before the death of Ptolemy IV in 204 but must be after 180 in the time of Ptolemy VI (with Cleopatra I and II).

From their misattribution of the monetary reform to before 204, H-L developed their presumption of a relationship of the monetary reform to an incipient social revolt beginning c.207.⁵¹ They also supported their assignment of hoard coins (H-L1-4) to Ptolemies IV and V (before 180) by an argument-*a-silentio* based on the absence of coins Sv1380 and Sv1384⁶³ (see Appendix A). The result of the H-L process is that their chronology of the Coinex hoard was obtained from coins absent from the hoard. They dated the hoard from the dates of unmarked coins of Ptolemy IV (although all such coins were absent from the hoard) and from the absence of coins Sv1380 and Sv1384 (also not present in the hoard). They also used the original dates of coins of Ptolemy III although those coins in the hoard were effectively redated by the reform.

The chronology of the hoard can be obtained by thoroughly recognizing that revalidation and redating, as well as countermarking, all result from the monetary reform and that, consequently, none of the coins in the hoard are pre-reform, they are reform coins (nos. 1-62) and post-reform coins (nos. 63-163). Then, both the date of the monetary reform and the dates of coins in the hoard can be determined directly from coins present in the hoard (as shown in Parts II and III) without any arguments-from-absence or by any initial presumption of a relationship to a historical event. In addition, the resulting attributions (Table 1, col. 4) are no longer in conflict with characteristics of the coins themselves (Appendix B), nor with assignments determined from other hoards or with information gained about the monetary reform from papyri (Part IV).

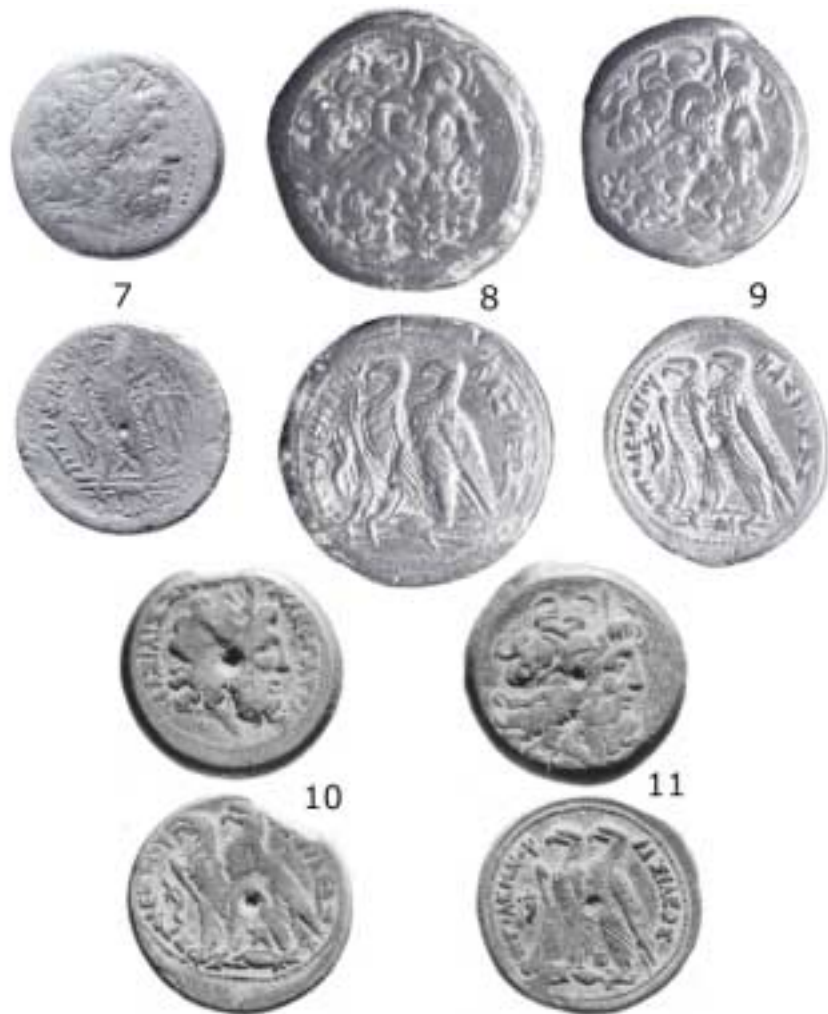
Acknowledgement. I wish to thank Catharine Lorber for being very helpful, as well as gracious, in giving information, ideas and suggestions that have greatly aided me in forming my views of the Coinex hoard when I first decided to look into this matter. I should also like to thank Norman Janzen, Edward Piers, and Jim Russell for useful discussions and suggestions.

KEY TO PLATES 1-2

1. H-L1; Huston-Lorber 47, 49.34 g, Sv1145 with cornucopia countermark.
2. H-L2; Huston-Lorber 63, 38.00 g, Sv1423v.
3. H-L3; Huston-Lorber 96, 36.32 g, Sv1423.
4. H-L4; Huston-Lorber 99, 31.28 g, Sv1424.
5. Huston-Lorber 5, 46.54 g, Sv1166; Ptolemy III.
6. Huston-Lorber 10, 30.06 g, Sv1167; Ptolemy III.
7. Huston-Lorber 15, 14.96 g, Sv1169; Ptolemy III.
8. Huston-Lorber Sv1424-A = Malter, February 1978, lot 216, 34.57 g.
9. Huston-Lorber Sv1424-B = Malter, February 1978, lot 217, 24.47 g.
10. Noeske 195⁷², 23.76 g, Sv1380; Ptolemy VI with Cleopatra I (180-176).
11. Noeske 200, 21.26 g, Sv1383; Ptolemy VI with Cleopatra I (180-176).



1. H-L1; Huston-Lorber 47, 49.34 g, Sv1145 (i.e., with cornucopia countermark).
2. H-L2; Huston-Lorber 63, 38.00 g, Sv1423v (i.e., large horn Zeus variety).
3. H-L3; Huston-Lorber 96, 36.32 g, Sv1423 (i.e., standard Zeus obverse).
4. H-L4; Huston-Lorber 99, 31.28 g, Sv1424 (i.e., cornucopia in the die)
5. Huston-Lorber 5, 46.54 g, Sv1166; Ptolemy III (i.e., cornucopia at shoulder).
6. Huston-Lorber 10, 30.06 g, Sv1167; Ptolemy III (i.e., cornucopia at shoulder).



7. Huston-Lorber 15, 14.96 g, Sv1169; Ptolemy III (i.e., with cornucopia in the die)
8. Huston-Lorber Sv1424-A = Malter, February 1978, lot 216, 34.57g., (as n. 4 above)
9. Huston-Lorber Sv1424-B = Malter, February 1978, lot 217, 24.47 g., (as n. 4 above)
10. Noeske 195⁷², 23.76 g, Sv1380; Ptolemy VI with Cleopatra I (180-176)
11. Noeske 200, 21.26 g, Sv1383; Ptolemy VI with Cleopatra I (180-176).

¹ S. M. Huston and C. C. Lorber, 'A hoard of Ptolemaic bronze coins in commerce, October 1992 (CH 8, 413)' *NC* 2001, p. 11-40; C. C. Lorber, 'Large Ptolemaic bronzes in third-century hoards', *AJN* 2000, p. 80-8.

² H-L, 'Hoard', p. 14-18.

³ H-L, 'Hoard', p. 15, 19, 23-4, 36-7.

⁴ H-L, 'Hoard', p. 19, 22-3, 29.

⁵ H.-Chr. Noeske, 'Gegenstempel auf Ptolemäischen bronzemünzen', *MDAI(K)*, 51, 1995, p. 203.

⁶ M. Thompson, 'A Ptolemaic bronze hoard from Corinth', *Hesperia*, 20, 1951, p. 355-67.

⁷ M. J. Price, Appendix J, 'Coins', in *The Sacred Animal Necropolis at N. Saqqâra*, London 1981, p. 158-61.

⁸ H-L, 'Hoard', p. 35.

⁹ There are three coins (H-L nos. 1-3) of Ptolemy II that do not have a cornucopia but their presence is nevertheless consistent with all the other coins in the hoard (H-L nos. 4 to 164); the three coins have types, weights and sizes very similar to others in the hoard. Unlike all the other coins in the hoard there is no other positive evidence that they were validated by the reform.

¹⁰ 'Third-century hoards', p. 67-79.

¹¹ The weights of modules are "idealized" (see Lorber, 'Third-century hoards', p. 69), i.e., the actual weights of individual examples are almost always somewhat lesser, rather than greater, than the modular weight.

¹² From data listed in Table 1 of Lorber, 'Third-century hoards', p. 70-1, 75. The number of each module in various hoards have been corrected for typos that give Newell's nos. 3-5 to the Getty hoard and for two other coins (Newell nos. 6,7) missing from the listing.

¹³ It is generally agreed that Ptolemy V (204-180) did not produce coins of modules 48 or 36g with cornucopia symbols as those in the Coinex hoard. The largest bronze of Ptolemy V (Sv1233, an Isis head coin) has a weight of only 30 g (average of 20 examples of Svoronos). There is no evidence that Ptolemy V produced any examples of bronze coins greater than c.34 g; see H. Cadell and G. Le Rider, *Prix du blé et numéraire dans l'Égypte lagide de 305 à 175*, *Papyrologica Bruxellensia*, 30, Brussels 1997, p. 16-20. Lorber has indicated there is evidence that "perhaps even the Sv1233 series had been withdrawn from circulation", see C. Lorber, 'book review, ancient', *AJN*, 7-8, 1995-6, p. 273.

¹⁴ Metal recovered from the early high copper content coins was apparently adulterated by about 25% lead and used to produce the new lower weight coins of the reform. Caley reports analyses of examples as follows; a pre-reform Sv1125 coin of Ptolemy IV contained 91.80% Cu and 0.68% Pb while a post reform Sv1424 coin of Ptolemy VI contained only 65.11% Cu yet 28.78% Pb. See E. R. Caley, *The Composition of Ancient Greek Bronze Coins*, *Memoirs of the American Philosophical Society*, 11, Philadelphia 1939, p. 95-8. See also, B. Bouyon, G. Depeyrot, J.-L. Desnier, 'Systèmes et technologie des monnaies de bronze', *Collection Moneta*, 19, 2000, p. 44-6, 49-50.

¹⁵ J. G. Milne, 'The currency under the Ptolemies', *JEA*, 24, 1938, p. 205-6.

¹⁶ J. G. Milne, 'The copper coinage of the Ptolemies', *Annals of Archaeology and Anthropology*, I, 1908, p. 40.

¹⁷ Countermarking in order to revalidate earlier coins at the time of a monetary reform has the same effect as overstriking of earlier coins with a new type, i.e., countermarking is a “cheap and easy way of restriking coins”; see C. J. Howgego, *Greek Imperial Countermarks*, London 1985, p. 13-14. Both overstriking and revalidation by countermarking convert earlier coins to a later time. A difference is that, when the countermark is as simple as a cornucopia, the date of revalidation is not as obvious as it would be from a complete overstrike with a new type. Demonetization, countermarking and revalidation are discussed briefly by H. Seyrig, *Monnaies contremarquées en Syrie*, Syria 1958, p. 187-190.

¹⁸ Howgego, ‘Countermarks’, p. 65. See also n. 17 above.

¹⁹ Noeske, ‘Gegenstempel’, p. 198, 203; Lorber, ‘book review’, *AJN*, 7-8, 1995-6, p. 273.

²⁰ Price, ‘Saqqâra’, p. 159-160; H-L describe the close relationship (content and closing date) of the Saqqâra hoards with the Coinex hoard, see H-L, ‘Hoard’, p. 27-9.

²¹ M. Thompson, ‘A Ptolemaic bronze hoard from Corinth’, *Hesperia*, 20, 1951, p. 355-67. Thirty-one Isis type coins (Sv1384) and one example of Sv1380 were found at a level of 7.80 to 8.40 m below the surface in a well that had ceased to be a water supply at the time of deposit. Two examples of Sv1424-5 were found at a higher level (5.50-5.90 m). She states that all these coins were probably associated as a hoard but were separated when the level from 2.10 to 8 m was deposited together as part of the destruction of Corinth in 146. She concluded that Sv1380 is a coin of Ptolemy VI (with Cleopatra I, 180-176) and that Sv1424-5 are coins of Ptolemy VI after 170.

²² Price, ‘Necropolis’, p. 158-61. Price, ‘Saqqâra’, p. 161, concluded from the Sacred Necropolis hoards that Sv1424-5 were produced shortly before 170.

²³ The close chronological association of Sv1424 with Sv1380 by reverse types, cornucopia markings, and monogram (or initial) was recognized by both Poole and Svoronos. The assignment of coins H-L2,3,4 (=Sv1423-4) to Ptolemy VI (with Ptolemy VIII, 170-163) was originally made in 1904 by Svoronos (see J. N. Svoronos, *Τὰ νομίσματα του κράτους των Πτολεμαίων*, Athens 1904; German translation in vol. IV). This corrected the assignment by Poole (*BMC Ptolemies*, 37, p. 107) to Ptolemy IX (named Ptolemy X in *BMC*). Poole, like Svoronos, related Sv1423-4 (= *BMC* 24-30) to Sv1380 (= *BMC* 20-23). However, he mistakenly believed these both belonged to Ptolemy IX with Cleopatra III during 116-107 rather than to Ptolemy VI with Cleopatra I and II (180-163). The Corinth hoard firmly established Sv1380 to Cleopatra I with Ptolemy VI (180-176) and Sv1424 to later. See n. 21 above.

²⁴ G. Hölbl, *A History of the Ptolemaic Empire*, London and New York 2001, p. 141-8.

²⁵ Coins with double cornucopia produced after 180 include Sv1380, 1383, 1384, 1424-8.

²⁶ In addition to the countermarked coins of Ptolemy IV (nos. 42-62) H-L note the existence of eight examples (among 36 g Sv993 and Sv1127, and 24 g Sv994 and Sv1151) where coins showing a cornucopia symbol from the die in either the lower left (or upper right) field were counter marked with a cornucopia in the upper right (or lower left) field, respectively; see H-L, ‘Hoard’, p. 36. Such counter marking in either position is consistent with the validity, after the reform, of coins that appear in the hoard with cornucopia symbols from the die in either position (as described in Part II above).

²⁷ For a review of this disrupted period, 207-183, see Hölbl, ‘History’, p. 152-9.

²⁸ A. Segrè, ‘The Ptolemaic copper inflation’, ca. 230-140 B.C.’, *American Journal of Philology*, 1942, p. 188, states that ‘It is impossible that copper coins continued to retain the same face value in the period of the inflation.’ He suggested that the government ‘issued the same copper coins with an ever-increasing value in copper drachme’.

²⁹ Rostovtzeff outlines, in general, the expected effects of inflation which includes a reduction in coin weight and an increase in quantity, see M. I. Rostovtzeff, *The Social and Economic History of the Roman Empire*, Oxford 1957, p. 1501. There are many historical examples that illustrate these effects (or causes) of inflation.

³⁰ Cadell and Le Rider suggest that for about ten years following the revolt of 206, to finance internal expeditions and also for the war against Antiochus III, it was necessary to mint large quantities of bronze currency; see ‘Prix du blé’, p. 85.

³¹ A referee reported that “...the break between the early Ptolemaic large and heavy bronzes and the subsequent issues which are smaller and lighter is evident not only in hoards. It can be shown even in small parcels from excavations. Regrettably most of the latter are not well documented or published because of their poor preservation and their lack of attraction for collectors, and excavators/numismatists.”

³² Price, ‘Saqqâra’, p. 158; he also could have mentioned the absence from the Saqqâra hoards of coins of Ptolemies II, III and IV.

³³ H-L, ‘Hoard’, p. 30-4.

³⁴ T. Reekmans, ‘Economic and social repercussions of the Ptolemaic copper inflation’, *Chronique d’Égypte*, 1948, p. 324-342; T. Reekmans, ‘The Ptolemaic copper inflation’, *Studia Hellenistica*, 1951, p. 67-9, 83-5, 94-5.

³⁵ K. Maresch, *Bronze und Silber: Papyrologische Beiträge zur Geschichte der Währung im ptolemäischen und römischen Ägypten bis zum 2. Jahrhundert n. Chr.*, *Papyrologica Coloniensia*, 1996, p. 21-29.

³⁶ Even denominations are not clearly established; e.g., Cadell and Le Rider, ‘Prix du blé’, p. 16-20, gives a recent review of various interpretations of the eight possible denominations of Ptolemy II’s bronze coinage.

³⁷ Segrè, ‘Inflation’, p. 187-8 states “It is mere curiosity to try to ascertain the value of the copper coins”.

³⁸ Reekmans, ‘Economic’, p. 324-5; Maresch, ‘Bronze’, p. 23, broadly accepts Reekman’s outline.

³⁹ Cadell and Le Rider, based on the prices of wheat, gave different times of ‘thrust’ of bronze inflation during the period 222-173. They also have a different general explanation that does not involve an official formulation of a ‘copper standard’. Instead, they apply well recognized modern theories of inflation and they very reasonably ascribe inflation to a combination of social conditions (e.g., crises), increased money supply and decreased supply of products or services; see Cadell and Le Rider, ‘Prix du blé’, p. 70-86.

⁴⁰ Reekmans, ‘Economic’, p. 324-5, 333; Maresch, ‘Bronze’, p. 58-60.

⁴¹ Reekmans, ‘Economic’, p. 325, 338; Maresch, ‘Bronze’, p. 60-2.

⁴² Reekmans ‘Economic’, p. 325-6. Maresch, ‘Bronze’, p. 62 questions Reekmans’s dating and points out that the evidence is a single, quite doubtful voucher. Weiser notes that a monetary ‘restoration’ occurred c.173. He gives page headings for ‘drachm standards’ over various periods. These are related to the highest weighted coins in each period. Over the intervals listed for his first nine time periods, spanning 300 to 176, the weights decrease from a high of 106.8 g (for the period 300-256) down to a low of 26.7 g (180-176). These drachm standards illustrate the general decrease in theoretical (and observed) drachm weight with time. For the tenth period, 176-170, a ‘restoration’ of an earlier standard is indicated where the drachm standard weight is now increased to 44.5 g.; see W. Weiser, *Katalog Ptolemäischer Bronzemünzen der Sammlung des Institutes für Altertumskunde der Universität zu Köln*, *Papyrologica Coloniensia*, 23, Opladen, 1995, p. 92.

⁴³ Reekmans, ‘Economic’, p. 326.

⁴⁴ R.A. Hazzard, *Ptolemaic Coins—An Introduction for Collectors*, Toronto, 1995, p. 82. In the second century (and later) large bronze coins were sporadic and in little quantity.

⁴⁵ Hazzard, ‘Ptolemaic Coins’, p. 84-90.

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- ⁴⁶ Segrè, 'Inflation', p 186; T. Reekmans, 'Monetary history and the dating of Ptolemaic papyri', *Studia Hellenistica*, 1948, p. 16.
- ⁴⁷ Cadell and Le Rider, 'Prix du blé', p. 92.
- ⁴⁸ O. Mørkholm, 'Eulaios and Lenaïos', *Classica et mediaevalia*, 22, 1961, p. 35. A monetary reform that involved production of new types of bronze coins (Sv1415-19) also occurred about this time in Syria; Mørkholm dated this reform to near 173. It was earlier assumed that these bronze coins were minted in Egypt during Antiochus IV's invasion in 170, see O. Mørkholm, 'Some reflections on the production and use of coinage in ancient Greece', *Historia*, 31, 1982, p. 301-305.
- ⁴⁹ Although the countermarked coins of Ptolemy IV are usually catalogued as coins of Ptolemy IV (221-204, see examples in Lorber, 'Hoard', p. 22, n. 25, and *SNG Cop.* 210-11, 215, this is because the countermark has not been considered. However, when evidence relating to the presence of the countermark is considered, they are catalogued from c.180 to 176/170 (c. time of Ptolemy VI), see Weiser, 'Katalog', 140, p. 86.
- ⁵⁰ H-L, 'Hoard', p. 14, 19, 23.
- ⁵¹ H-L, 'Hoard', p. 23-4.
- ⁵² H-L also claim three hoards (Ramesseum, Luxor, and Carnarvon hoards) as evidence that "the older currency had clearly been demonetized before the loss of Thebes in 205". However, contrary to this H-L conclusion, the weight distributions of these hoards all show that demonetization had not yet occurred, i.e., coins of 96 and 72 g modules were present in each. Furthermore, the contents of these hoards also suggest that currency reform had not yet occurred, i.e., no countermarked coins were present; see H-L, 'Hoard', p. 23 and Lorber, 'Third-century hoards', p. 75-6.
- ⁵³ H-L, 'Hoard', p. 23, 24, 29-40.
- ⁵⁴ Milne was first to recognize such evidence; see nos. 15, 16, 31 above.
- ⁵⁵ H-L, 'Hoard', p. 11-12, 21-2, and the headings of their listing, p. 14-15.
- ⁵⁶ For example, Lorber, 'Third-century hoards', p. 82, states that 'With average weights of c.40 and c.29 g [in the Coinex hoard], their metrology does not fit into the pattern of weights seen in third-century hoards.'
- ⁵⁷ H-L, 'Hoard', p. 29.
- ⁵⁸ H-L, 'Hoard', p. 25-6.
- ⁵⁹ Although H-L indicate that he later changed his mind on the origin (Alexandria rather than Cyprus) of Sv1380 this did not affect his dating of Sv1424-5; see H-L, 'Hoard', p. 29 and n. 22 above.
- ⁶⁰ H-L, 'Hoard', p. 26, n. 34; see J. Malter, *The Coinage of Ancient Egypt*, Auction II, 23-24 February 1978, lots 216 (Sv1424A, 36 mm, 34.57 g), 217 (Sv1424B, 29 mm, 24.47 g).
- ⁶¹ The broad variation of weights for H-L's listing of Sv1424 (see H-L, 'Hoard', p. 25), with extremes of 36 and 16 g, may result from two different denominations under the same designation (i.e., Sv1424) or the appearance of two "modes" (29 and 23 g) may not be statistically significant.
- ⁶² Lorber, 'Third-century hoards', p. 81, n. 16 therein. However, Noeske states that he sees no evidence from countermarks for two different episodes of countermarking. He feels that successive use of cornucopia counter marking over many years or decades is unlikely; see Noeske, 'Gegenstemple', p. 203.
- ⁶³ H-L, 'Hoard', p. 28-9.


⁶⁴ If, as suggested by H-L, the time of burial of the five Saqqâra hoards and of the Coinex hoard is before 180 the burial of all six hoards would then be changed from a time of special threat to Memphis during the crisis of war with Syria (the invasion of Antiochus IV in 170) to a period when there was no recognized threat; see H-L, 'Hoard', p. 29 and n. 45.

⁶⁵ Although coins Sv1380 and Sv1384 were surely produced after 180, one or more of several possibilities may account for their absence from the hoard. 1) Coins Sv1380 are quite rare and were likely not readily available even in ancient times. A commercial lot of Egyptian bronze of over one thousand coins contained only two of Sv1380 (H-L, 'Hoard', p. 29, n. 44). It is not surprising that the Coinex hoard of only 164 coins contained none. 2) Sv1380 is an unusual type with a legend giving the name "Queen Cleopatra" and it is therefore an especially collectable coin that might well have been among those dispersed before the hoard was recorded (H-L, 'Hoard', p. 11). 3) Selection of larger coins by the hoarder may also have been a factor; the major type of coin in the Coinex hoard (Sv1424) is also the smallest in the hoard, yet it is generally larger than most examples of Sv1380 and 1384; compare the diameters given by Svoronos for Sv1380 (30mm, see Plate 2, n. 10), Sv1384 (28/27 mm), and Sv1424 (29/34 mm, see Plate 1,2, nos. 4, 8 and 9). The very common Isis coin Sv1384 is generally the smallest of all. 4) In addition, although produced after 180, it is not clear when (or if) production of Sv1384 occurred during the decade 180-170; Thompson assigned Sv1384 to within the period 180-164, see Thompson, 'Corinth', p. 357. In general, there is no necessity that a hoard contain specimens of all the various coinage circulating at the time of burial and an argument-from-silence remains, as ever, inconclusive.

⁶⁶ There are other ramifications when all the Sacred Necropolis hoards are put to before 180; e.g., in hoard F the reassignments to before 180 would include the types Herakles (Sv1491, 1494); Alexander (Sv1495); and Ammon (Sv1375 with control K and cornucopia countermark). Other K marked coins, not in the hoard (Sv1374, 1376-9), would then also have to be redated to before 180. These coins are presently attributed to after 180, see e.g., Price 'Saqqâra', p. 159.

⁶⁷ H-L, 'Hoard', p. 26-7 and reference n. 37 therein.

⁶⁸ O. Mørkholm, 'The Ptolemaic "Coins of an Uncertain Era"', *NNÅ*, 1975-6, p. 50-1.

⁶⁹ Huston and Lorber also suggest (H-L, 'Hoard', p. 20, 23) that certain barbarous coins, that are copies of Ammon/two-eagle coins in the hoard and of Isis head coins, were produced during the social disruptions that began in 207 and continued to 183. However, the presence of barbarous examples of Isis coins with monograms similar to  (e.g., Malter, 'Coinage', lots 271, 273), that only appear on regular coinage after 180, makes it necessary that that these barbarous copies were produced after 180 or, more likely, after 170 perhaps during the especially difficult times following the two Syrian invasions of 170-168. The time after 168 was similar to the uprising and other social disturbances that occurred in the time of Ptolemy V (204-180); see Hölbl, 'History', p. 181-4.

⁷⁰ C. C. Lorber, 'The lotus of Aphrodite on Ptolemaic bronzes', *SNR* 2001, p. 45-6. Lorber, reviewing the H-L assignments to Ptolemy V, states that "His [Ptolemy V's] Egyptian coinage includes bronzes [i.e., Sv1423=H-L3] of the same weight as [coins] V1 [coins of av. c.40 g], anomalous in terms of Ptolemaic bronze metrology both in Egypt and in Cyprus". According to H-L, coins of c.40 g (countermarked coins and large-horn Ammon coins) circulated during the time of Ptolemy V while coins of 96, 72 and 36 g apparently ceased circulation. While the reform proposed by H-L produced a new type of coin in only two modules, c.40 and 29 g (H-L3 and 4), a previous reform of bronze coinage in the time of Ptolemy II produced a unified set of coins in at least seven different modules; see, e.g. O. Mørkholm, *Early Hellenistic Coinage* Cambridge, 1991, p 105-6. The correct attribution removes the anomalous assignment of H-L to Ptolemy V and suggests at least five possible denominations for the series Sv1424-8, see Part IV.

⁷¹ H-L, 'Hoard', p. 18, 21, 35.

⁷² H.-Chr. Noeske, *Die Münzen der Ptolemäer*, Frankfurt 2000, p. 110-113.