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# Journal of the **Numismatic Association of Australia**





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*Front cover:* Scottish silver ryal of Mary and Henry, Regular issue (not to scale); from dies A19/55, weight 468.3 grains. (See article "The Silver Ryals coinage of Mary, Queen of Scots")

# Contents

Contents	iii
President's Report	iv
Editor's Note	v
<b>Paul M Holland</b> Unusual 1945 Y. Australian Halfpenny: a Numismatic Rosetta Stone?	1
<b>John McDonald</b> A Newly Identified Antoninianus of Carausius in the Name of Diocletian	7
Kathryn Harris & Mark Nemtsas Valuable Coins in Change	19
<b>Tyron Pigors</b> Serendipitous Noodling	39
<b>John Shannahan</b> Satrapal Coins in the Collection of the Australian Centre for Ancient Numismatic Studies: Tiribazus, Pharnabazus, and Mazaeus	41
<b>Mick Vort-Ronald</b> Australian Banknote Serial Numbering	58
<b>David J Rampling</b> The Silver Ryals Coinage of Mary, Queen of Scots	90
Sponsors	149
Guidelines for authors	152

# President's Report

Planning for our seventh biennial international numismatic conference, NAAC2017, is under way, with national organiser Walter Bloom and local organizing committee chair Darren Burgess. While the conference will be held 20<sup>th</sup> – 22<sup>nd</sup> October in Melbourne, the actual venue is still being negotiated.

The Royal Numismatic Society of New Zealand will be holding a numismatic conference in Auckland during the period of 14 – 17 July to celebrate 50 years of decimal currency in New Zealand. The conference will be held at the Quality Hotel, Parnell, an inner suburb of Auckland, with the actual conference held on 16 and 17 July, a commercial bourse on 15 July and some tours/closed conference bourse (as at NAAC2015 in Adelaide) on Friday 14 July.

This year Australian numismatics lost Terry Naughton, an avid collector of ancients, who participated in our early biennial conferences. We also saw the passing of Dion Skinner, who almost became a household name with the publication of his Australian Coin and Banknote Catalogue *Renniks* (Skinner spelt backwards) commencing in 1964 when the conversion to decimal currency was on the horizon.

We have still not found a replacement auditor, and our Treasurer, Gwent Khoo, has advised that she won't be renominating at our coming AGM due to the pressure of work and study. I am very sorry to be losing Gwent, who has done a wonderful job; she has *electronified* all the NAA accounting, making it relatively easy for her successor. Of course we still have Gwent until the AGM scheduled for Monday 27 March in Sydney, commencing 1.30pm. The venue is yet to be determined since our usual venue at Status International will not be available with the company moving to Glebe.

The NAA continues to enjoy sponsorship at a sustainable level, with Noble Numismatics (Gold), Downies (Silver), Coinworks, Drake Sterling, Sterling & Currency, The Purple Penny and Universal Coin Co (bronze) all contributing to ensure the Association's continued success.

I am appreciative of the support of Council and other NAA members throughout the year, and particularly our Secretary, Jonathan Cohen, and Treasurer, Gwent Khoo, who are pivotal in the running of the Association, and our Managing Editor, Gil Davis, for his work in producing this Volume 27 of JNAA.

#### Walter R Bloom

President, NAA www.numismatics.org.au December 2016

# **Editor's Note**

Welcome to the 27<sup>th</sup> volume of the journal, and my sixth as Managing Editor. It has a fine balance of articles reflecting the collecting and academic interests of members ranging from ancient to modern Australian. All have excellent scholarship and should provide a useful resource. In particular, it is wonderful to have the major study by David Rampling of the silver ryals coinage of Mary, Queen of Scots. David's meticulous work will make this article the primary authority.

This journal is the annual publication of the peak numismatic body in the country. Its role is to showcase Australasian numismatics. During my tenure as editor I have worked with the President and the Editorial Committee to ensure we publish original work of the highest standard and value comparable with the best international numismatic journals. This includes a rigorous double-blind peer-review process.

We would now like to extend the range of material we cover especially to New Zealand and the Asian region more broadly, but also into other areas. To facilitate this, we have expanded the editorial board, and now have a magnificent collection of numismatic expertise at our disposal. I list the names, affiliations and areas of interest of the academic editorial board on page vi. We welcome submissions and will work with authors to ensure the best outcome.

As always, I express my appreciation to the people who make the journal possible in a practical sense: Walter Bloom is a font of knowledge and support; John O'Connor proof-reads the articles and somehow spots the mistakes I can no longer see; and Barrie Newman carefully looks after the production process. I also thank the members of the board who have helped with articles and the many reviewers who must sadly remain anonymous.

I trust you will enjoy reading the 27th volume.

**Dr Gil Davis** Managing Editor

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# Unusual 1945 Y. Australian Halfpenny: a numismatic Rosetta Stone?

### Paul M. Holland

#### Abstract

The origin of round raised dots on coins in seemingly random locations has long presented a mystery. This article employs detailed numismatic observations and technical analysis on a very unusual 1945 Y. halfpenny to address this issue. The coin itself exhibits more than twenty raised ring-like features ranging from about 0.1-0.5 mm in diameter on its reverse. Electrochemical considerations suggest that these highly unusual features are due to interrupted corrosion (rust) at the periphery of small droplets at the surface of a coinage die. This interpretation is confirmed by simple experiments on a freshly machined steel surface that produce this same 'rust ring' morphology and, when left unchecked, can account for the observation of round raised dots on coins in seemingly random locations.

### Keywords

[predecimal coinage] [die variety] [corrosion] [raised dot] [coinage dies] [bronze coins]

### Article

It is the difficult and perplexing numismatic problems that are usually the most interesting. Among these is the origin of the raised dots occasionally observed on coins in seemingly random locations, and in a range of different sizes. While raised dots have been used as mintmarks on predecimal Australian bronze coins, their unexpected appearance in other locations on coins and how this came about has long presented a mystery. Several examples on Australian predecimal bronze pennies are shown in Figure 1, including raised dots near the O of ONE on the reverse of two different 1934 pennies, and the relatively large dot after the designer's initials KG on a 1945 penny.<sup>1</sup> Others, including raised dots on predecimal silver coins, are listed in John Dean's book<sup>2</sup>.

<sup>1</sup> Skinner, Dion H. *Renniks Australian Coin and Banknote Guide*, 6th ed., Renniks, Unley, South Australia, 1970 (see B50A, page 14).

<sup>2</sup> Dean, John Australian Coin Varieties Catalogue, 1st ed., Hawthorn, Melbourne, 1964.



Figure 1. Raised dots on various Australian penny varieties (see text).

Such dots have also been observed in the British predecimal bronze coinage, with examples shown in Figure 2. On top are two different 1875 pennies with dot below the I of VICTORIA on the obverse, and "cannonball" to the right of the ship on the reverse. Below this is shown the 1897 penny with a round raised dot between the O and N of ONE on the reverse, which is especially well known to collectors. This dot was originally assumed by Freeman to be a die identification mark, and he gave it a separate listing<sup>3,4</sup>. However, in his 1985 book, he describes this as occurring "as a result of damage to the die – a specimen showing only a small crack in this region has been seen."<sup>5</sup> Michael Gouby has also discussed this variety suggesting "that a small piece of grit, metal filing, etc. got trapped on the die leaving a small indent when it fell out" resulting in the raised dot on the coin<sup>6</sup>. Nonetheless, this 1897 penny is still separately listed in many catalogues, and the presence of the dot on this coin can result in a more than 15-fold premium.<sup>7,8</sup>



Figure 2. Raised dots on various British penny varieties (see text).

- 3 Freeman, Michael J. *The Victorian Bronze Penny*, 2<sup>nd</sup> ed., The Author: Ayr, 1966, page 36.
- 4 Freeman, Michael J. The Bronze Coinage of Great Britain, Langman and Co., London, 1970, page 41.
- 5 Freeman, Michael J. *The Bronze Coinage of Great Britain*, 2<sup>nd</sup> ed., Barrie and Jenkins, London, 1985, page 51.
- 6 Gouby, Michael The British Bronze Penny: Specialized Edition, Michael Coins: London, 2009, page 92.
- 7 Coins of England and the United Kingdom, 51st ed. Spink: London, 2015, page 491.
- 8 "Price Guide to Pennies", Coin News, May 2015, Token Publishing, UK, page 68.

As a student of predecimal bronze coinage varieties, the origin of such dots and the possible mechanism leading to their formation has long been of interest. During a July 2000 visit to Australia, I was fortunate in being able to obtain an EF example of an unusual 1945 Y. Australian halfpenny from M. R. 'Bob' Roberts that seems to offer important insight into this problem, along with another nVF identical confirming coin with the same features. These coins show numerous small raised circular rings and dots in the vicinity of AUSTRALIA on the reverse, especially at the TR of AUSTRALIA, as shown in Figure 3. In his March 1997 issue of NUMI\$NEWS, Roberts describes these as having an O or C letter positioned between the T and R, and that he found this to occur on about one in every 70 of the 1945 Y. halfpennies examined.<sup>9</sup> Similar ring-like features and raised dots also occur at the neck and face of the kangaroo, and elsewhere on the coin. After Sydney, my next stop was the Perth Mint where these unusual halfpennies were originally struck. After showing them to the mint's technical department, we examined them under a microscope and took photographs, but no answers were forthcoming. Since my primary focus at the time was on Perth Mint predecimal proofs,<sup>10</sup> the puzzling problem presented by these coins was then set aside.



Figure 3. Raised ring-like features and dots on unusual 1945 Y. halfpenny (see text).

During the intervening years I occasionally thought about this problem, but it was only recently that a plausible mechanism for the formation of these ring-like features occurred to me. Under detailed microscopic examination more than 20 of these ring-like features ranging from about 0.1-0.5 mm in size can be seen. These raised rings exhibit rough surfaces suggesting corrosion, as shown in the closeup of the distinctive 0.4 mm ring directly below TR at the lower right of Figure 3. On the face of a steel die, such corrosion can only be rust. The unusual circular form of these features and the fact

<sup>9</sup> NUMI\$NEWS, March 1997, M. R. Roberts, Sydney, page 13.

<sup>10</sup> Holland, Paul M. "Perth Mint Proof Coins 1955-1963", Journal of the Numismatic Association of Australia, vol. 16, 2005, pp 3-48.

that they are seen in many different sizes, strongly suggests that they resulted from rust forming at the periphery of tiny water droplets, where both atmospheric oxygen and water would be present at the surface of the die, thus providing ideal conditions for rust formation.

It is well known from surface science that on hydrophobic surfaces water spontaneously beads up into droplets in order to minimize their surface area. Under the right conditions on a steel die thinly or incompletely coated with oil or grease, I postulate that these droplets on the surface could directly lead to a circular ring of rust. Once established, such circular rings would likely establish a locus for additional corrosion, eventually leading to filled-in round beads of rust at the surface of the die. Due to the very low tensile strength of rust compared to hardened die steel, when used in a coining press this rust would be rapidly pulverized and lost leaving a round pit. This process could potentially account for the observation of round raised dots in seemingly random locations on coins struck from these dies.

Considering the specific case of the 1945 Y. halfpenny shown in Figure 3, such a corrosion event might lead to incuse circular rings etched into the surface of the die, and therefore directly result in the observed raised rings on the struck coins. Such ring structures are highly unusual features, and these are the only ones I have seen in more than thirty years of collecting and studying predecimal bronze. In my opinion, these circular rings document a corrosion process that began at the periphery of tiny water droplets that sometime afterwards was *suddenly stopped*, capturing and preserving these transient features.

The relatively uniform width of these "rust bands" in spite of the significant size differences seen in these circular rings supports this conjecture. Some of the smallest ones, in fact, appear to have rusted well into the interior, nearly merging into a circular bead rather than a ring, and numerous other tiny raised dots can be seen. Also of interest is the much thicker band of the raised "donut-like" feature observed on the upright of the R of AUSTRALIA (upper right image in Figure 3). On the die itself, this would have been located in a deeply incuse area, suggesting that while the corrosion process at the die face may have been *stopped* by wiping it clean, corrosion likely continued somewhat longer in this protected incuse area.

To further investigate this phenomenon, a few simple experiments were performed. This involved placing tiny droplets of water onto a freshly machined steel surface after rubbing the surface to impart a thin layer of oil. The water is placed onto the surface using a miniature probe, and observations show that this immediately forms into tiny beads. The test assembly is inserted into a small chamber to ensure a high humidity environment, and the results examined using a digital microscope. Rusting at the periphery of these droplets is observed in all cases, with the best results obtained when a small amount of salt was added to the water. An example is presented in Figure 4, where a 0.7 mm rust ring can be seen that closely resembles the ring-like structures observed on the reverse of my 1945 Y. halfpenny. The morphology of this ring-like structure can be explained by the electrochemistry of a small droplet containing salt on a steel surface where a rust band forms between an inner anodic region and an outer cathodic region at the periphery of the droplet, where there is better access to atmospheric oxygen<sup>11</sup>.



Figure 4. Rust ring generated at the periphery of a water droplet on a freshly machined steel surface (see text). Taken together, these observations suggest a possible scenario for the accidental creation of this unusual variety. In 1945, all coinage dies for the Perth Mint were produced at the Melbourne Mint, and the Royal Mint Report shows that 72 of these reverse halfpenny dies were prepared.<sup>12</sup> This gives a very close match to the one in 70 occurrence rate for this variety among 1945 Y. halfpennies reported by Roberts,<sup>9</sup> and thus provides indirect evidence that the formation of the observed ring-like structures on this reverse die was complete before it was used to strike coins. This is further supported by the observation that the features on both of my examples of this coin appear to be identical.

Under the wartime conditions that prevailed at both mints in 1944-1945, quality control procedures were probably affected. Also, coinage die production would have reached its annual peak at the end of 1944/beginning of 1945, the hottest time of year in Melbourne. What is the probable source of the salt? One might imagine that there was no shortage of human perspiration (which contains salt) in the mint workshop at a time when there was no air conditioning. In any event, this 1945 Y. halfpenny die must have been improperly handled or stored, perhaps before shipment to Perth. At some point the resulting small amounts of surface rust on the die were likely discovered and cleaned off, suddenly stopping any further corrosion at the surface but allowing it to continue in some deeply incuse areas such as on the upright of the R of AUSTRALIA.

Regarding round raised dots on coins in seemingly random locations, studies of corrosion pitting on the surface of steel show that circular rust pits are typically produced, which

<sup>11</sup> Evans, Ulick R. *The Corrosion and Oxidation of Metals: Scientific Principles and Practical Applications*, Edward Arnold Ltd., London, 1960, pp 118-119 and 711.

in cross-section exhibit a 'saucer shaped' or rounded appearance below the surface<sup>12</sup>. This closely matches the raised dots seen on coins, which typically show a smoothly rounded appearance that makes them appear to have been deliberate. In fact, had a punch with a rounded end been used to deliberately impress them into the surface of a coinage die, a raised rim of displaced metal would have also been produced. On struck coins this would result in a small depression surrounding the dot, as is frequently seen on 1919-1920 bronze pennies. To eliminate this feature due to displaced metal whenever deliberate dots are added by the mint, the surface of the die itself must be repolished.

In numismatics, as in life, among the most interesting questions is how? Arguably, study of this unusual 1945 Y. halfpenny variety has provided us with a kind of numismatic Rosetta Stone that allows interpretation of the unusual ring-like features it presents. The resulting numismatic insight reveals a very plausible formation mechanism that seems to explain the origin of the mysterious round raised dots observed on predecimal bronze coins in seemingly random locations.

# Acknowledgements

The author would like to acknowledge Prof. Peter Gaspar of Washington University for helpful comments and suggestions, and thank Richard Sessions for providing close-up images of British pennies with "cannonball" by the ship, and dot between the O and N of ONE used in Figure 2.

### Author

Paul M. Holland is a scientist with a Ph.D. in physical chemisty and M.Sc. in oceanography who lives in Santa Barbara, California. He has collected and studied die varieties of both Australian and British predecimal bronze coinage for more than 30 years. Paul is a longtime member of the Australian Numismatic Society and British Numismatic Society, has contributed a number of articles to JNAA, and is a previous recipient of the NAA's Ray Jewell Bronze Award.

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<sup>12</sup> Annual Report of the Deputy Master and Comptroller of the Royal Mint 1945, London, page 44.

# A Newly Identified Antoninianus of Carausius in the Name of Diocletian

# John McDonald

### Abstract

An unpublished and previously unknown Antoninianus issued in Britain by the usurper Carausius in the name of Diocletian has recently been identified. Its highly unusual and interesting reverse shows the standing figures of three emperors, the rogue emperor Carausius together with Diocletian and Maximian, the two legitimate emperors of the time, accompanied by what appears to be the legend CONCORDIA AVGGG. The coin forms part of a series of coins issued by Carausius in about AD 292-293 on which he represented himself as one of a collegiate group of three emperors ruling harmoniously together rather than merely being a rebel. These coins support sparse historical evidence that a treaty may have been briefly established with Carausius after a failed attempt at an invasion of Britain by Maximian in about AD 289-290. The reverse design on this coin is not known from any other coins of the period. Its iconography is much more specific and unequivocal than usual, providing particularly clear evidence of Carausius' ambitions for a formal rapprochement with Diocletian and Maximian.

#### Keywords

[Carausius] [Diocletian] [Maximian] [antoninianus] [three emperors] [CONCORDIA] [AVGGG] [Britain] [treaty]

#### Introduction

The coin described in this article was found in early 2016 in Perth, Western Australia, in a tray of cheap coins. The dealer acquired it in Britain as part of a bulk lot and its provenance prior to that is unknown.<sup>1</sup> Research to date indicates that it is a previously unknown and unpublished type from an historically interesting series of coins issued in Britain in about AD 292-293 by the rebel Carausius.

<sup>1</sup> Editor's note: The Editorial Board is working on a policy about the publishing of unprovenanced coins which potentially have been illegally exported. While we do not condone such exports, we do recognise the reality that they occur and that such coins could have been unwittingly purchased. Currently, every submitted article is assessed on its merits; if we come to the conclusion that the coins described were purchased in good faith, and have been exported by someone who did not recognise their significance, then we do not set this as an automatic bar to publishing in JNAA.

# The historical background

In AD 286 the Western part of the Roman Empire was ruled by the emperor Maximian while the senior emperor Diocletian ruled the East. Each of them held the rank of Augustus and from March AD 293 onwards they would each be assisted by a deputy with the lower rank of Caesar, under an innovative new governing system that we now know as the *Tetrarchy* (rule by a group of four).

The military officer Marcus Aurelius Mausaeus Valerius Carausius<sup>2</sup> had been appointed to command a Roman fleet that patrolled the coast of Gaul and the English Channel from a base at Gesoriacum, also known as Bononia (Boulogne), tasked with suppressing seaborne Frankish and Saxon raiders.<sup>3</sup>

Carausius had not been in his naval command for long before he was accused of pocketing some confiscated booty rather than handing it over to local or Imperial authorities.<sup>4</sup>,<sup>5</sup> So in AD 286 or 287 Maximian ordered his execution. Carausius somehow got word of this and decided that his only hope was to rebel, so he declared himself emperor and took his fleet across the channel to Britain<sup>6</sup>,<sup>7</sup> where he won the support of the legions stationed there, deposed the Governor and set up his capital in London. He also retained control over Gesoriacum and a stretch of the Gallic coast.

For about seven years<sup>8</sup> Carausius ruled Britain and successfully resisted the efforts of Maximian to unseat him. There is some evidence that Maximian attempted a crosschannel invasion of Britain in the late summer of AD 289 or perhaps in AD 290. A panegyric to him that was probably delivered in the spring or summer of AD 289 made it clear that Maximian had more or less finished building an invasion fleet.<sup>9</sup> However, another panegyric delivered some two years later was still predicting future maritime success.<sup>10</sup> Clearly no successful invasion of Britain had taken place. It must have been either repulsed or abandoned. It seems likely that, following a failed or aborted invasion, Maximian and Diocletian were forced to agree to some sort of truce with Carausius, but specific historical references to it are extremely limited and imprecise. A single sentence by Eutropius<sup>11</sup> tells us that:

<sup>2</sup> Casey 1994, 47.

<sup>3</sup> Eutropius, Book IX, 21.

<sup>4</sup> Eutropius, Book IX, 21.

<sup>5</sup> Aurelius Victor, De Caesaribus, 39. Translation Bird 1994, 43.

<sup>6</sup> Eutropius, Book IX, 21.

<sup>7</sup> Aurelius Victor, De Caesaribus, 39. Translation Bird 1994, 43.

<sup>8</sup> Eutropius puts the length of Carausius' reign at 7 years (Eutropius, Book IX, 22) while Aurelius Victor puts it at 6 years (Aurelius Victor, De Caesaribus, 39). I have followed Eutropius.

<sup>9</sup> Panegyrici Latini X, 12, Panegyric of Maximian (289). Translation Nixon & Rodgers 1994, 72-73.

<sup>10</sup> Panegyrici Latini XI, 19, Genethliacus of Maximian Augustus (291). Translation Nixon & Rodgers 1994, 102-103.

<sup>11</sup> Eutropius, Book IX, 22.

With Carausius, however, as hostilities were found vain against a man eminently skilled in war, a peace was at last arranged.

According to Aurelius Victor, although rebels in Africa and Egypt were suppressed at about this time<sup>12</sup>, Carausius was permitted to remain in control of Britain, having been judged capable of governing and defending it<sup>13</sup>. The implication is that Diocletian and Maximian conceded some degree of recognition to Carausius as a matter of expediency while they dealt with other problems, although what form this may have taken is not made clear. Whatever form of recognition was granted to Carausius, it did not last for long.

In March AD 293, Constantius Chlorus was appointed Caesar of the Western Empire and given command of a renewed campaign against Carausius. He quickly succeeded in taking Gesoriacum and this setback apparently undermined the authority of Carausius, who was assassinated. His place was taken by his Chief Finance Officer, Allectus<sup>14</sup>, who was involved in the assassination plot. Allectus managed to maintain the independence of Britain for another three years. Eventually, probably in the late summer of AD 296, some of the forces of Constantius, under the command of his Praetorian Prefect<sup>15</sup>, managed to land on the British coast. Allectus was killed on the battlefield and Britain came back under the control of the Tetrarchy.<sup>16</sup>

#### The "three emperors" coinage of Carausius

Evidence provided by the coinage of Carausius supports the proposition that he was able to secure a truce with the two emperors on the continent after a failed invasion attempt. It is uncertain whether or not this involved formal recognition of his claim to imperial status, but Carausius was clearly determined to convey that impression to the population under his control.

Roman coins were an important propaganda medium, and in about AD 292 Carausius began to use his coins to promulgate the message that he had become an acknowledged partner of the legitimate emperors across the channel rather than merely being a rebel. Until then his coins had only carried his own portrait, with legends that included the imperial title of *Augustus* in the normal, abbreviated, singular form of AVG. But from

<sup>12</sup> Aurelius Victor, De Caesaribus, 39. Translation Bird 1994, 45.

<sup>13</sup> Aurelius Victor, De Caesaribus, 39. Translation Bird 1994, 45.

<sup>14</sup> Aurelius Victor, De Caesaribus, 39. Translation Bird 1994, 45. Allectus is described as having been 'entrusted ... to manage the treasury'.

<sup>15</sup> Aurelius Victor, De Caesaribus, 39. Translation Bird 1994, 45. 'Constantius destroyed him through Asclepiodotus, who was his praetorian prefect and was sent ahead with a detachment of the fleet and of the legions'.

<sup>16</sup> Eutropius, Book IX, 22. Panegyrici Latini VIII, 11-19, Panegyric of Constantius (297). Translation Nixon & Rodgers 1994, 126-140.

John McDonald

about AD 292, the plural form AVGGG appeared, signifying the joint rule of three emperors.

The most common theme on the reverse side of these coins was peace and stability, as it had been on the earlier coinage of Carausius. The legend PAX AVGGG (the peace of the three emperors) was by far the most abundant, illustrated by the following example (Figure 1).



Figure 1: Carausius, billon antoninianus, London, c. AD 292-293 (RIC V/II 143) **Obverse:** IMP C CARAVSIVS PF AVG. Radiate, draped and cuirassed bust, right.

**Reverse:** PAX AVGGG. S|P|MLXXI. Pax standing left, holding olive branch and transverse sceptre

The predominance of Pax types was obviously aimed at persuading the general population that they were safe under the rule of Carausius. Their peaceful existence would be even more secure if he had the support of Diocletian and Maximian, as asserted by this new series of coins. To further emphasise his claims for a new collegial relationship with Maximian and Diocletian, Carausius went as far as issuing some coins from his mints at Londinium (London), and another site somewhere in Britain (the 'C' mint), carrying their portraits and titles in place of his own. Most of these also carried the plural AVGGG in their reverse legends.

The location of the 'C' mint is still debated, but opinion favours Camulodonum (Colchester). Studies of the geographical distribution of hoards and site finds have not provided support for this view, but apart from suggesting that the source might have been located somewhere in the western part of Britain they have failed to indicate an alternative site<sup>17</sup>. It has also been suggested that the 'C' mint might have been a mobile mint travelling with Carausius<sup>18</sup>, an idea with some appeal considering the dispersed

<sup>17</sup> Lloyd 1998, 6.

<sup>18</sup> Moorhead 2015, 18.

distribution of finds. The most unequivocal coins of all are the rare examples on which the obverse shows the bust of Carausius jugate with those of Maximian and Diocletian, accompanied by the legend CARAVSIVS ET FRATRES SVI (Carausius and his brothers) (Figure 2).



Figure 2 (Image courtesy Classical Numismatic Group, Triton VI Sale, Lot 1074) It is clear that Diocletian and Maximian were compelled by circumstances to acknowledge Carausius' control of Britain and nearby coastal parts of Gaul, and to cease hostilities against him, at least temporarily. But apart from this series of his own coins there is no evidence that they conceded him imperial status and accepted him into a triarchy.

From a numismatic perspective it is telling that they did not issue coins in the name of Carausius or with the plural titular contraction AVGGG. After Maximian had been raised to the rank of Augustus in April AD 286 until the formation of the Tetrarchy in March 293, reverse legends on coins of Diocletian and Maximian regularly included AVGG, showing that two emperors were ruling together. Had Carausius been formally accepted as a third imperial colleague there can be little doubt that AVGGG would also have appeared on significant numbers of their coins. But it did not. The reality of the situation was that they could not possibly tolerate his secessionist regime and were determined to destroy him as soon as they could manage to marshal the necessary military resources. It seems likely that Carausius used his coinage to lay claim to a greater degree of legitimacy than had actually been granted to him. This could have been intended simply to reassure the general populace, or it could have been aimed more specifically at reinforcing his authority and suppressing latent discontent among the military and the upper classes, the usual breeding ground for coups.

Allectus, the successor of Carausius in Britain, issued no similar coins, confirming that a rapprochement with Diocletian and Maximian had been short-lived and had died with Carausius, if not sooner. Unfortunately, the traditional reference work for the coinage of Carausius (*The Roman Imperial Coinage (RIC)* Volume V Part II) was published in 1933 and is now severely outdated. However, a new edition is in preparation by Dr Sam Moorhead of the British Museum. The most up-to-date, currently available list of

types for the coins issued by Carausius on behalf of, or purportedly in conjunction with, Diocletian and Maximian seems to be that published by Bourne in 2009.<sup>19</sup> The following table summarises the reverse types documented by Bourne, supplemented by a small number of additional types currently listed in the on-line catalogue of the British Museum.<sup>20</sup> The table ignores some minor variants in the details of designs and mintmarks.

# Summary of published reverse types for Carausius in the names of Diocletian and Maximian

Note:	D = Diocletian, M = Maximian, C = Carausius, D/M/C = 3 emperors jugate.
	<sup>BM</sup> signifies types in the British Museum on-line catalogue not listed by Bourne.

Reverse Legend	Reverse Design	Issued For
London Mint		
COMES AVGGG	Minerva standing with spear and shield	М, С
CONSERVAT	Horeulas standing with globalion skin and slub	D
AVGGG	There dies standing with globe, non skin and club	D
CONSERVATORI	Hercules standing with how lion skin and club	C
AVGGG	There are standing with bow, non skin and club	C
HILARITAS AVGGG	Hilaritas standing with palm and cornucopia	M, C
IOVI CONSERVAT	Juniter standing with scentre and thunderbolt	D
AVGGG	Jupiter standing with sceptre and thunderbold	D
LAETITIA AVGGG	Laetitia standing with wreath and anchor	D
	Pax standing holding sceptre and branch or victory on globe	D, M, C,
PAX AVGGG		D/M/C
PROVIDENTIA	Providentia standing with baton, globa and corrugonia	DMC
AVGGG	Flovidentia standing with baton, globe and cornecopia	D, M, C
SALVS AVGGG	Salus standing feeding a snake	D, M, C
SPES AVGGG	Spes standing holding flower and raising skirt	М
[]TORI AVGGG	Sol in facing quadriga	D
VIRTVS AVGGG	Three Emperors standing left holding globes and batons	$D/M/C^{BM}$
VIRTVS AVGGG	Virtus or Mars standing with spear and shield	D, M, C
VIRTVS AVGGG	Trophy between two seated captives	D
VIRTVS AVGGG	Mars advancing with spear and shield	D
VIRTVS AVGGG	Mars advancing with shield, spearing seated captive	С
VIRTVS AVGGG	Three Emperors standing , holding globe and batons	D/M/C <sup>BM</sup>

<sup>19</sup> Bourne 2009. The Coinage of Carausius and his Colleagues. 199-206.

<sup>20</sup> https://www.britishmuseum.org/research/collection\_online/search.aspx

Reverse Legend	Reverse Design	Issued For
'C' Mint		
ABVNDAN AVGGG	Abundantia standing emptying cornucopia into modius	С
COMES AVGGG	Victory advancing with wreath and palm	C, D/M/C
CONCORDI AVGGG	Two figures facing, clasping hands	D, C, D/M/C
CONCORDIA AVGGG	Two figures facing, clasping hands	D, C, D/M/ C <sup>BM</sup>
FIDES MILIT(VM)	Four standards	D
HILARITAS AVGGG	Hilaritas standing with palm and cornucopia	С
LAETITIA AVGGG	Laetitia standing with wreath and anchor	D, C
MONETA AVGGG	Moneta standing with scales and cornucopia	D, M, C, D/M/C
PAX AVGGG	Pax standing holding sceptre and branch	D, M, C, D/M/C
PAX AVG	Pax standing holding sceptre and branch	D, M
PIETAS AVGGG	Mercury standing with purse and caduceus	С
PROVID AVGGG	Providentia standing with baton, globe and cornucopia or globe and sceptre	D, M, C
PROVIDEN AVGGG	Providentia standing with baton, globe and cornucopia	С
SALVS AVGGG	Salus standing or seated, feeding a snake	M, C
SPES PVBL	Spes standing holding flower and raising skirt	D, M
VICTOR AVGGG	Victory advancing with wreath and palm	С
VICTORI AVGGG	Victory advancing with wreath and palm	D/M/C
VICTORIA AVGGG	Victory advancing with wreath and palm	D, D/M/C
VICTORIA AVGGG	Victory advancing, holding trophy	М
VIRTVS AVGGG	Virtus or Mars standing with spear and shield	D, M, C D/M/C <sup>BM</sup>

A few other, as yet unpublished, reverse types are known to exist, but they do not include the type that is the subject of this article (personal communication Dr Sam Moorhead).

# The newly identified antoninianus in the name of Diocletian

The newly identified coin was issued by Carausius in the name of Diocletian and was struck at the 'C' mint (Figure 3).



Figure 3: Carausius in the name of Diocletian , Billon Antoninianus, "C" mint, c. AD 292-293 **Obverse:** IMP C DIOCLETIANUS P AVG

00101001	
	Radiate, draped and cuirassed bust, right.
Reverse:	[]DIA AVGGG
	SPC
	<i>Three togate figures, standing facing each other, possibly clasping hands.</i>
Diameter:	21 mm
Weight:	3.21 gm

The only plausible reading of the reverse legend is CONCORDIA AVGGG. The three standing figures are clearly togate and therefore male. They stand in a group facing inwards towards each other. The figure on the right faces to the left, the central figure probably faces left but possibly forward, and the one on the left faces to the right. They may be clasping hands, but this is not clear. In my opinion there is little room for doubt that these are the three emperors; Diocletian, Maximian and Carausius. From their stances one might speculate that the figure on the left is Carausius being welcomed by Diocletian and Maximian. The probable reverse legend refers to the harmony of, or among, the three emperors.

The message conveyed by the iconography of the reverse is particularly interesting and much more specific than usual. Most coins of the series seek to associate the three emperors indirectly through common attributes or shared qualities, usually represented on the reverse by deities or personifications. For example they are bringers of peace (represented by the figure of Pax), share remarkable valour (represented by Virtus), or are all victorious (represented by Victory with her wreath and palm). However, this coin sets out to directly depict Carausius as an equal and acknowledged colleague in a supposedly harmonious relationship with the legitimate emperors Maximian and Diocletian.

The previously undocumented reverse provides unusually clear evidence that Carausius regarded himself as an accepted member of a ruling triumvirate, or at least that he set out to portray himself as such for domestic political purposes. In addition, the use of this reverse design on a coin bearing the name and portrait of Diocletian was undoubtedly

intended to convey the impression that the senior emperor accepted Carausius as an equal. It would be surprising if there had not been a similar piece in the name of Maximian, although no examples of such a coin are known.

There are several known examples of CONCORDIA AVGGG or CONCORDI AVGGG reverses from the 'C' mint, but they show only 2 standing figures. The following example is from the British Museum collection (Figure 4):



Figure 4 (Image © Trustees of the British Museum. Museum Number 1962, 1212.1431)
Carausius in the name of Diocletian, billon antoninianus, "C" mint, c. AD 292-293
Obverse: IMP C DIOCLETIANVS AVG. Radiate, cuirassed bust, right.
Reverse: CONCORDI AVGGG

|| SPC
Two figures standing, facing and clasping hands.

This coin has the same mintmark and almost the same reverse legend as the newly identified coin. The two standing figures represent the senior emperor Diocletian being greeted by Concordia, or perhaps Diocletian greeting Carausius. Reverse designs of this type were reasonably common during the late Third Century and a similar one was also used on a CONCORDIA MILIT reverse issued by Carausius in his own name. Only a small number of rare reverses with three standing figures are known on Carausian coins, none of which match the newly identified coin. RIC lists a reverse type for Carausius in the name of Diocletian, from an uncertain mint, described as two emperors clasping hands with Victory between them with her hands on their shoulders, the legend being VICTORIA AVGGG.<sup>21</sup> I have not been able to locate an image of that coin. RIC also lists a reverse for Carausius alone showing three standing winged victories with the legend

<sup>21</sup> RIC V, Part II, Carausius, Diocletian and Maximian, 31. The authority cited by RIC for this coin is Webb (1907). Webb in turn cites Cohen (1888) whose authority is a private individual identified as M. Rollin, possibly M. Claude Camille Rollin who was apparently a well known coin dealer in Paris at the time. Incidentally, Rollin was also one of the publishers of the second edition of Cohen's volumes. The coin was not illustrated in any of the sources.

#### John McDonald

VICTORIV CARAVSI AV<sup>22</sup> and another with three female figures standing, hands upraised and no reverse legend.<sup>23</sup> Each are from an uncertain mint and no images of them could be found. Even without images, it is obvious that none of the coins with three standing figures on the reverse listed in RIC matches the new coin.

Another reverse described as three standing emperors, attributed to the London mint, does not resemble the newly identified coin in any respect. This coin is not in RIC but is listed in the British Museum on-line catalogue. The obverse carries the three jugate busts of Diocletian, Maximian and Carausius, and the reverse legend is VIRTVS AVGGG (Figure 5). The three figures stand in a row facing left, each holds a baton, one holds a globe and they are wearing military tunics. They are quite unlike the figures on the newly identified coin. One other, currently unpublished, coin with three figures on the reverse is known from a single example. It depicts three standing figures, possibly holding scales, thought to be Monetae. It does not match the newly identified coin.<sup>24</sup>



Figure 5 (Image © Trustees of the British Museum. Museum Number 1938,0715.2)
Carausius with Diocletian and Maximian, billon antoninianus, London mint, c. AD 292-293
Obverse: Unclear legend. Radiate, cuirassed?busts of the three emperors, right, jugate.
Reverse: VIRTVS AVGGG Mintmark unclear in image (attributed to London). Three emperors standing left, holding globe and batons.

<sup>22</sup> RIC V, Part II, Carausius; 530. RIC cites a preliminary report on excavations at St Albans, dated 1931. No further information is available at the time of writing.

<sup>23</sup> RIC V, Part II, Carausius; 1063. RIC cited Webb (1907) who cited Petrie (1848). Petrie gave his source as the private collection of a C. R. Smith Esq. Webb's description differs from Petrie's, which was simply "Three figures standing". It is not known if Webb sighted the coin or based his expanded description on a line drawing in Petrie. Unfortunately that drawing is reproduced too poorly in my copy to be helpful.

<sup>24</sup> Personal communication - Dr Sam Moorhead.

Dr Sam Moorhead has confirmed that the British Museum collection does not include the newly identified reverse type from the 'C' mint, and he is not aware of the existence of another example (personal communication). Similar responses were received from the Münzkabinett, Staatliche Museen, Berlin, the Kunsthistorisches Museum, Vienna and the Bibliothèque Nationale de France, Paris. At this stage it seems that the newly identified coin may be the only known example, although who can tell when or where another might turn up. It is a significant new find that throws a little more light on an obscure period in the history of Roman Britain.

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#### Author

John McDonald is a retired mining geologist who now has more time to pursue his interests in ancient history and Roman Imperial coins. Apart from being a member of the Numismatic Association of Australia, he is a member of the Perth Numismatic Society and editor of its journal. He is also a member of the Roman Archaeology Group at the University of Western Australia

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# Valuable Coins in Change

#### Kathryn Harris and Mark Nemtsas

#### Abstract

Noodling, or looking through bulk lots of coins, is a time-honoured part of coin collecting, and is often the way that new coin collectors enter the hobby. This paper introduces collectors to the art of 'noodling' Australian decimal coins. It explains how to source coins and know which tools and references are helpful. A list of sought-after coins by denomination is provided with aids to their identification and approximations of current value.

# Keywords

[coin noodling] [error coins] [coin varieties]

# Introduction

Coin noodling, coin hunting, coin fossicking, it's all the same thing. It is the act of looking through a large number of coins for unusual errors, varieties, low mintage coins, or simply one of each coin design to make a full set. It is often the perception among experienced coin collectors that noodling decimal coins in Australia is largely a waste of time and that true noodlers only bother to look through hoards of pre-decimal silver and bronze coins. Nothing could be farther than from the truth. In the last few years looking at decimal coins for errors and varieties has grown in popularity because of the value to be found in those coins. As an added bonus, the cost of getting into this rewarding hobby is essentially zero. All that is needed to get started is a pair of functional eyes, a stack of loose change to look through, a handy reference such as this, and some enthusiasm. So why wait, let's get started!

# Where to Find Coins

The most common place to find coins to noodle is your change. New noodlers often come to the hobby when they receive an odd looking coin in their change. They will then start taking closer notice of their change and be amazed at the sheer number of different designs that can be found on various coins. Enthusiasm will grow and they will want to look through more coins than can be found in a pocket, purse, or money box. To keep moving forward those enthusiasts will want to source some bulk coin lots. This will increase the chance of finding something special.

Coin rolls or bags are most commonly found at banks or retailers. Retailers are going to be reluctant to hand out their bulk change as they have paid for that convenience. If you work in retail or know someone who does then this could be a good way of finding coins to look through.

### <u>Banks</u>

Banks are the most popular place to obtain bulk coins. The routine goes something like this. Go to a branch where you have an account, ask for an amount of change (say \$500 in \$1 coins), take those coins home, noodle through them and redeposit the coins you do not keep in *another* branch. It is important to switch your branches or you will end up looking at the same coins over and over.

Many new collectors think that banks will be a great source of new shiny uncirculated coins direct from the mint. But do not be fooled into thinking that they will have new coins as different branches have differing demands usually due to their location. For example, banks in large shopping centres receive huge quantities of circulated coin from surrounding retailers which is then sent out of the bank. Those branches almost never receive new coins. Other banks may be next to popular gaming venues and act as clearing houses for thousands of circulated dollar coins pulled from gaming machines. It is really a matter of luck and the only way to know is to ask at the bank. A word of warning though, if you do not have an account at the bank they are likely to be unhappy providing you with coins to feed your hobby, so be polite, think about opening an account, and be willing to try different branches.

# Security Companies

Some lucky noodlers have connections to the security companies who deliver coin to their clients – usually banks, businesses and retailers. These security companies are the means by which coins move from bank to bank, from the Royal Australian Mint (RAM) to banks, and then from banks back to the Royal Australian Mint. Given that the RAM uses security companies to deliver new coin means that they are the best chance of getting new coin to look through. A noodler without direct contacts within a security company must resort to trying to work out what banks they deliver their new coins to. Find out where they are and then you have a chance of finding new coins. Remember it is the Royal Australian Mint and security companies who determine when, where, and to whom new coin is delivered.

# The Club, the Pub, or the Casino

If you have not got a spare few hundred dollars to make bulk coin purchasing worthwhile why not visit the local club, take a \$50 note out of your wallet, feed it in a poker or gaming machine and press 'COLLECT'. Hey presto, you have \$50 in coins to look through. Do not be tempted by the flashing lights and music to play the game; this is not what you are here to do. Choose a well-lit machine in a quiet corner of the club and check each coin from the machine before feeding it back in to another machine. Many hundreds of the 2000 dollar mule coins have been found this way.

### The Tools You Will Need

One of the true delights of noodling for interesting or valuable coins is that you have all the tools you'll need to get started right now. That is because all you will need is a comfortable place to sit, your eyes, and adequate light. As you get deeper into the hobby you will probably want to purchase a few tools to make your job a little easier. These tools could include:

- A loupe or magnifier.
- A dedicated light source.
- An illuminated magnifier on a moveable arm.
- Some black felt to cover your work surface to make stacking and viewing your coins easier.
- A current coin catalogue or list of coins to look out for.

There are a couple of less tangible tools you will need to enjoy this pastime. The first of these is patience as sitting at a table for an hour or more while peering closely at several hundred or even thousands of coins can be tiring and often, you will spend your time fruitlessly without finding anything of interest. Without patience and persistence it is unlikely you will keep that up for long. The second tool that any seasoned coin collector possesses is knowledge. To be successful you need to read and learn as much about types of varieties and how to identify them, and to be able to distinguish a genuine error coin from mere post-mint damage. With the plethora of information available online (and from papers like the one you are reading right now) growing your knowledge is free and only takes time!

# An Incomplete List of Target Coins

It is not possible within the space given to us here to provide a complete list of interesting coins that can be found in circulation here in Australia. The focus will be on some key coins or types of coins that are either easy to spot, worth more than face value, or hold a prominent place in local coin noodling 'folklore'.

### Non Circulating Legal Tender (NCLT)

A huge array of coins is produced each year by the Royal Australian Mint for the collector market. These coins are Australian legal tender and often have the same specifications as circulation coins but were not ever intended to get into circulation and be spent. Of course, sometimes they do and you can occasionally find these types of collector coins in change. This is all a bit odd because their value as collector coins is usually much more than their face value. Examples of collector only dollar coins that might end up being found in change can be seen in Figure 1.

While not quite non circulating legal tender it is not too unusual to find coins intended for mint sets or proof sets in circulation. While these coins might bear the same design as normal circulating coins their lustre and quality of strike makes them stand out from the norm. Proof coins, of course, have a frosted/mirrored appearance and are even more distinctive when found in circulation.



Figure 1: The 2012 Coloured Sumatran Tiger, 2011 Census, 2012 Wheat Sheaf (seen with Bluebell counterstamp) and 2011 Presidents Cup.

### Circulating Designs with added mintmarks not Issued for Circulation

From time to time the Royal Australian Mint will place a special mark on a standard design coin that you would normally find in circulation. This is simply so that they have another product to market to coin collectors who find such things attractive. In 1993 the Landcare dollar was minted for circulation but coins with that same design were issued to collectors with C, S and M mintmarks via various agricultural shows around

the country.<sup>1</sup> It is quite possible to find one of those coins in your change (where it was never meant to be). Another example is from 2009 when the Mint put a 'Master Mintmark' in the shape of a kangaroo within a C on the regular 'mob of roos' dollar coin.<sup>2</sup> This is a slight change to a circulating coin that could easily be overlooked and passed on in change. You can see this Master Mintmark dollar coin in (Figure 2), the mintmark can be found at about 2 o'clock on the reverse of the coin.



Figure 2: The 2009 Master Mintmark Dollar Coin.

#### Silver in Circulation

It has been almost 50 years since Australia issued a circulating coin that contained any silver, and that was the iconic 1966 round 50 cent coin (Figure 3). That coin was hoarded out of circulation by the Australian public as the silver value quickly outstripped the face value of the coin.<sup>3</sup> Despite this the round silver coins (which contain about a third of an ounce of silver) are still spent in shops for 50c and cashed in at banks for face value. The authors are continually amazed by stories of people asking bank tellers "Do you have any strange looking 50 cent coins?" and then being able to buy one or several 1966 rounds for face value. Right now those coins are worth about 14 times face value so that is a bargain.

<sup>1</sup> McDonald (2014): 150

<sup>2</sup> McDonald (2014): 166

<sup>3</sup> Australian Fifty Cent Coins - 1966 Round Silver 50c: http://www.cruzis-coins.com/50c/1966.html



Figure 3: Reverse of the 1966 Round 50 Cent

There is one other source of silver in circulation and that is from pre-decimal silver coins: florins, shillings, sixpences and threepences. The authors have in the last several years received both a 1960 florin and a 1963 shilling in change, and still hear of noodlers finding florins in rolls of 20 cent coins and rogue threepences in bags of 5 cent coins. Sure it does not happen often, but it does happen and it is something to look out for.

### **One Dollar Coins**

#### 2000 \$1/10c Mule

A 'mule' coin is created when the dies used to mint the coin were never intended to be used together. The most famous Australian 'noodlers delight' is the year 2000 \$1/10c mule. This coin in Figure 4 was struck on a regular aluminium bronze dollar coin planchet and the reverse shows the familiar 'mob of roos' design. The obverse however, is a bit different because that side was struck with an Australian 10c obverse die. That die is slightly smaller than the dollar obverse die and this leads to the key identifier of the 2000 \$1/10c mule, the rather obvious thicker rim around the portrait of the Queen.

With an estimated mintage of 6,000 coins,<sup>4</sup> these surfaced initially in Perth where they were found in their hundreds by keen noodlers who spent many weeks at the Burswood Casino looking for them. They are still found today by people who hunt for them, and the authors hear stories of people finding them in their change quite frequently.

<sup>4</sup> Mule Madness! https://downies.wordpress.com/tag/2000-1-mule/



Figure 4: The 2000 \$1/10c Mule 2001 Centenary of Federation Dollar – Rotated Die Error

While striking the 2001 Centenary of Federation (COF) dollar coin there was a problem during the production run of one pair of obverse and reverse dies.<sup>5</sup> The problem was that the obverse die wasn't fastened correctly and it slowly rotated as it struck more coins. This meant that instead of the produced coins having the usual medal alignment (obverse and reverse oriented the same way) they were produced with all manner of angles between the obverse and reverse dies. These coins are known as 'upset' or 'rotated die' coin errors and anyone who finds a 2001 COF dollar in change should spin it between their fingers to see if the sides are correctly aligned. If they are not you have found yourself a nice little error! Some people have found enough of these upset Federation dollars with various angles of upset to create an entire clock-face of errors. That is, a 1 o'clock upset, a 2 o'clock upset, and so on.

### Rabbit Ears Dollar (Various Years)

It has been proposed by various collectors that the area around the ear of the top kangaroo on the mob of roos dollar coin is inherently weak. This is suggested because that area of the die has broken off from time to time while it was striking coins leading to a cud in that area. This cud often takes a form that resembles the ear of a rabbit lying flat against the back of the kangaroo (Figure 5). This leads to the name of this interesting error: 'the rabbit ear dollar'. To-date rabbit ear dollars have been found on coins dated 1984, 1985, 1994, 1998, 2000, 2006, 2008, 2009, 2010 and 2013. If you see a dollar of any of those years make sure to flip it over and look at the top kangaroo.

<sup>5</sup> McConnelly (2015): 125

Kathryn Harris and Mark Nemtsas

In addition to this a coin may have a cud in front of the top kangaroo's mouth known as a 'spew roo', or the rabbit ears may appear further down the kangaroo's back on its own making a 'backpack roo'.



Figure 5: The Rabbit Ear Dollar 1992 Mob of Roos Dollar

Hidden away on the website of the Royal Australian Mint is a mintage table showing how many dollars were minted each year. 1992 reveals that the RAM minted 8,000 'mob of roos' dollars.<sup>6</sup> This is not that interesting until you find out almost no-one has ever seen one. The 1992 'mob of roos' dollar is a mythical beast which was not issued in mint sets or to collectors, and as far as is known, it was never released into circulation. The authors only know of two people who have seen one and eagerly sought a picture to confirm its existence, only to be told that the coin was accidentally spent buying a cup of coffee!

# 50 Cent Coins

### Double Bar 50 Cent Coins

There is a design feature on the reverse of the 'Coat of Arms' 50 cent coins that appears on some years and not on others. Immediately behind the head of the emu, two lines can be seen joining the head to the swirl of Mitchell grass. The two lines are known as 'double bars' and can primarily be seen on 50 cent coins of 1966, 1979, and 1980

<sup>6</sup> One dollar. 2015. One dollar. http://www.ramint.gov.au/designs/ram-designs/1dollar.cfm

(Figure 6). It is assumed that these lines initially formed part of the design but were removed because they caused die weakness and were subsequently removed by the Royal Australian Mint.<sup>7</sup> Generally 'Double Bar' 50 cent coins are not worth more than face value unless the condition of the coin is excellent.



Figure 6: Double Bars (left), No Double Bars (Right)

#### 1977 Coat of Arms 50 Cent

The circulating 1977 50 cent uses a non-standard reverse design that celebrates the silver jubilee of the accession of Queen Elizabeth II. The attractive radial design was sculpted by Stuart Devlin (who designed the reverses of all Australian decimal coins to that point in time) and should be familiar to most people in Australia. However, some 1977 50 cent coins were minted with the standard Coat of Arms design and these escaped the mint. Technically these coins are 'mules' as the 1977 obverse was never intended to be used with the Coat of Arms reverse. They are valued at several thousand dollars each.<sup>8</sup>

#### 2000 "Incuse Flag" Millennium 50 Cent

In the year 2000 the RAM released a commemorative 50 cent with a reverse design that included a large Australian flag with the usual Union Jack in the top left and 7 pointed Federation Star below. In mid-2006 it was noted by some collectors that the central Cross of St. George and the diagonal Cross of St. Patrick of the Union Jack was different on some of the 2000 Millennium 50 cent coins. On the majority of the coins the two crosses are in relief and the incuse surface of the Federation Star had a rough texture. A few of the coins were different - the Crosses of St. George and St. Patrick were incuse and the incuse surface of the Federation Star was smooth. This is the so called 'Incuse Flag' Millennium coin that has an estimated mintage of 200,000 coins. Figure 7 shows a comparison of the incuse flag against the regular relief flag on the 2000 Millennium 50 cent.

<sup>7 1980</sup> Double Bar Australian Fifty Cents. http://www.cruzis-coins.com/50c/1980d.html

<sup>8</sup> Rodgers, K. Mules Fetch Top Dollar in Downies Sale. http://www.numismaster.com/ta/numis/Article. jsp?ad=article&ArticleId=26697



Figure 7: Incuse Flag (left), Regular Flag (Right)

A recent Freedom of Information claim made to the Royal Australian Mint suggests that two pairs of 'incuse' reverse dies were prepared to strike high quality coins for mint sets. However, this never eventuated and the dies were used to strike coins for circulation.<sup>9</sup> The 'Incuse Flag' 50 cent is a favourite coin among noodlers and values range from a few tens of dollars for a well circulated coin to a thousand dollars or more for an uncirculated example.

#### 2010 Coat of Arms 50 Cent - Rotated Die Error

Figure 8 shows the 2010 Coat of Arms 'Rotated Die Error'. At some stage during the production process the obverse die was upset by one of the 12 sides of the iconic shape of the 50 cent coin. Perhaps the obverse production die was wrongly hubbed, or perhaps the die was simply installed incorrectly. The exact reason is unknown but the result is that there are a number of 2010 Coat of Arms 50 cent coins that have the obverse and reverse dies rotated by 30°. Noodlers have been finding these coins for the last few years and circulated coins are worth between \$30 and \$50.



Figure 8: 2010 50 Cent Rotated Die Error

<sup>9</sup> Royal Australian Mint (2013):6

### 20 Cent Coins

#### 1966 "Wavy Baseline" 20 Cent

The 1966 'Wavy Baseline' 20 cent is among the most desirable coins a noodler can reasonably expect to find. In 1966 some 30 million 20 cent coins were minted by the Royal Mint in London and some of those coins showed a distinctive curve at the top of the baseline of the '2' on the reverse. On genuine 'wavy' 20 cent coins there's a corresponding curve in the water wave above the base line and a thinning of the downstroke of the 2.<sup>10</sup> It is important to look for all these characteristics to determine if your coin is genuine as fabricated versions of this variety are not unknown. It is no surprise that attempts have been made to pass off fabrications of this interesting coin, with average circulated Wavy Baseline 20 cent coins worth at least \$200, and uncirculated coins worth several thousands of dollars. Figure 9 compares the Wavy Baseline 20 cent with a standard coin.



Figure 9: Wavy Baseline 20 Cent (left), Regular 20 Cent (right) <u>2001 Platypus 20 Cent – Rotated Die Error</u>

It is not a well-known variety, but some 2001 20 cent coins are upset by about 160°. The authors are aware of fewer than 10 examples of this variety. It is difficult to say whether this is due to the scarcity of the coin or the lack of awareness of the variety, and hence noodlers are simply not looking out for it. Regardless, it is a dramatic looking coin and can sell for upwards of \$100.

<sup>10</sup> Crellin, A. One of the Rarest Australian Decimal Coins Issued Into Circulation - the 1966 Twenty Cent With the Wavy 2. https://www.sterlingcurrency.com.au/research/one-rarest-australian-decimal-coinsissued-circulation-1966-twenty-cent-wavy-baseline.

# 10 Cent Coins

#### <u> 1966 10 Cent – Rotated Die Error</u>

Due to the demand for new coinage during the changeover to decimal coins in 1966, manufacture of coins was split between the Royal Mint in London, the Royal Mint branch in Perth, and the Royal Australian Mint in Canberra. 10 cent coins were minted in London and Canberra. It appears that at least one of the die pairs used in London had a loose obverse die and this resulted in London minted 1966 10 cent coins with all manner of rotated die errors. The authors have seen degrees of rotation ranging almost the full clock face of upsets. As usual with any upset die error, the most spectacular are those at or around 180 degrees. This variety is rare and sells for \$100 or more.

# **5** Cent Coins

### <u>1972 5 Cent</u>

Valuable only because of the relatively low mintage of 8.256 million coins the 1972 5 cent is a favourite coin to look for among noodlers new and old.<sup>11</sup> They can still be found with some regularity and will often realize \$5-\$10 on online auction sites.

### 2007 "Double Headed" 5 Cent

Double headed (and tailed) Australian decimals are not unknown. The coins are struck in the coining press while there are two obverse (or two reverse) dies installed and it is often thought these coins are 'mint sport'.<sup>12</sup> They are usually found in top grades suggesting they were removed from the mint by means other than getting put into circulation.<sup>13</sup> However, somewhat unusually, a number of double headed 2007 5 cent coins were put into circulation and have been found from time to time by coin noodlers and members of the public who noticed something odd with a coin in their change. A genuine 2007 'double header' 5 cent will have the two sides upset at 180 degrees and would be worth \$1,000 or more even when circulated.

### 2 Cent Coins

#### <u>1968 2 Cent</u>

The 1968 2 cent was minted at the Royal Mint branch in Perth and had a relatively low mintage of just under 17 million coins. They are keenly sought by collectors and circulated examples can sell for \$5 to \$10 via online auctions.

<sup>11</sup> Harris K., Nemtsas, M. Australian 1966-1984 Standard 5 Cent Mintages. http://www.australian-coins.com/ australian-coin-mintages/type/7/1966-1984-standard-5-cent/

<sup>12</sup> McConnelly (2015): 36

<sup>13</sup> McConnelly (2015): 36
## No SD Two Cent

The initials of Stuart Devlin can usually be found on the reverse of 2 cent coins just to the left of the front right paw of the frilled neck lizard. However, on some coins minted for 1967, 1968, 1973 and 1981 the initials cannot be seen. It is beyond the scope of this paper to go into the exact details why they are missing, but sufficient to say that the initials are believed to have been omitted (that is left off of the design) rather than just missing (due to die fill or weak strike).<sup>14</sup> In circulated grades a 'No SD' two cent would be worth \$10-\$20 while a full red uncirculated coin would be worth over \$1000.<sup>15</sup>

### <u> 1977 2 Cent – Doubled Obverse Die</u>

There are very few known examples of true hub doubled coins in the Australian decimal series. As far as the authors are aware, the 1977 2 cent with the double die obverse is the only recorded decimal variety of the type. The type is rare and the authors are only aware of one selling recently, a full red uncirculated coin that realized \$500 plus commission in Downies Auction#315 in October 2013.<sup>16</sup>

#### Low Mintage Coins

Various coins were released in low enough numbers to make them worth a little more than face value regardless of their condition. Table 1 provides a list of lower mintage coins that are worth putting to one side if you have found them in change or are noodling.

1968 1 cent – Perth Mint	1966 2 cent – Perth Mint	1968 2 cent
1973 2 cent – Perth Mint	1972 5 cent	1985 1 cent
1981 20 cent – 3 ½ claws	1988 Platypus 20 cent	1995 United Nations 20 cent
2001 Bradman 20 cent	2001 Centenary of	1985 50 cent
	Federation $20c \times 9$	
1988 First Fleet 50 cent	1991 'Rams head' 50 cent	2001 State Centenary of
		Federation 50 cent $\times$ 9
2012 'Poppy' \$2 Coin	2013 Purple Coronation \$2	2014 Green Remembrance
	Coin	\$2 coin
2015 'Lest We Forget'		
ANZACs Red \$2 Coin		

Table 1 - Low Mintage Coins

<sup>14</sup> Hartshorn, I. Missing SD. 2015. Missing SD. http://www.aussie-coins.com/fa4.htm.

<sup>15</sup> Eigner, E. Australia, 1981 Two Cent without SD initials - PCGS MS65RD. http://www.drakesterling.com/ coins-for-sale/products/1981-two-cent-without-sd-initials-1

<sup>16</sup> Australian Coin Auctions - Auction 315 - Decimal Errors and Varieties. 2013. http://downies.com/aca/ Auction315/Catalogue\_014.html

# **Error Coins**

Error collecting is a broad area of interest with many different types of possible errors. Furthermore each error coin is typically unique as it is usually the result of manufacturing problems at some stage during the coin production process. There are so many errors that it is not possible to provide a complete listing here. Nor is it possible to provide a complete explanation of how each error comes about. If you are interested, we suggest you read McConnelly's Australian Pre-Decimal & Decimal Coin Errors or Herbert's Official Price Guide to Mint Errors.

Following is a non-comprehensive list of some of the types of coin errors that might be found while noodling.

## Wrong Planchet Errors

In 2010 a lucky shopper was handed a dollar coin from the till as her change. It was very different indeed, struck on a completely wrong planchet, the bi-metal type, this coin had the edge lettering of a Venezuelan Bolivar.<sup>17</sup> This coin has not been offered for sale but we would expect it to fetch many thousands of dollars at public auction today. This sort of find is truly exceptional but not without precedent. Other decimal coins have been struck on foreign blanks such as 1981 20 cent coins struck on wavy flan Hong Kong \$2 blanks, 1995 United Nations 20 cents struck on Thai temple token blanks,<sup>18</sup> and \$2 coins struck on Euro 10 cent planchets (Figure 10).<sup>19</sup>



Figure 10: \$2 Coin struck on Euro 10 Cent Planchet

It is more usual (but by no means common) to find Australian wrong planchet errors struck on planchets intended for other Australian denominations. The authors are aware of almost every combination you could imagine: \$1 on 10c planchets, 50c on 20c planchets, 20c on 10c planchets, 50c on \$1 planchets, 5c on 1c planchets (Figure 11), and 2c on 1c planchets. The value of these sorts of errors is dependent on scarcity, with

<sup>17</sup> The Australian Coin Collecting Blog, Exciting New Dollar Discovery, The Australasian Coin and Banknote Magazine Vol 13 No.3:10.

<sup>18</sup> McConnelly (2015): 133

<sup>19</sup> McConnelly (2015): 134

a 2 cent on 1 cent planchet worth several hundred dollars and values for other variations scaling upwards to several thousands of dollars per coin.



Figure 11: 1989 5 Cent struck on 1 Cent planchet <u>Clipped Planchet Errors</u>

One of the most common errors to be found in change or while noodling is the clipped planchet, edge bite, or incomplete planchet error. In the case of this type of error the planchet is underweight due to being incorrectly punched at the time the blanks were manufactured. Clips come in various types including curved clips, straight clips, elliptical clips, and end of bar clips. Some coins may have more than one clipped area (double or triple clips) and the 50 cent coin with a dodecagonal shape has uniquely shaped clip errors (Figure 12). The value of clipped planchet errors varies greatly depending on the year of the coin, the grade, the denomination, the type of clip and the number of clips on the coin.



Figure 12: 1983 50 Cent with Clipped Planchet

#### Multiple Strike Errors

If a coin fails to leave the coining chamber after it is struck it can be struck again (double strike), or twice more (triple strike) or even more times. The most spectacular multiple struck coins are those struck outside of the collar resulting in radially offset strikes. Less visually exciting are those that are struck multiple times in the collar. These coins can

be a little hard to pick if they do not rotate between strikes (the 'rotated' multiple strike) but are nonetheless interesting.



Figure 13: 2008 Two Dollar – Double Struck

The double struck coin was a rare error indeed until 2009 when double struck two dollar coins began to turn up in circulation in Sydney (Figure 13).<sup>20</sup> All the coins were dated 2008 or 2009 and generally were removed from circulation early and are thus found in higher grades. The authors are aware of other double struck coins, especially earlier dated 1 cent and 2 cent coins. Later dates are rarer as are the larger denominations. Some two cent coins from the early 1980s have been sighted that were struck multiple times (5 times or more) in collar (Figure 14).<sup>21</sup>

Coin hunters should be aware that fake double struck coin errors are among the most common 'shed job' errors manufactured to dupe the unwary. Familiarisation with the indicators of both real and fake multiple struck errors should be a priority for any keen collector.

<sup>20</sup> The Australian Coin Collecting Blog, Dramatic \$2 Coin Errors Appearing, The Australasian Coin and Banknote Magazine Vol 13 No.7: 10-11.

<sup>21</sup> The Australian Coin Collecting Blog, 2010. A Striking Partial Collar 2c Error. The Australasian Coin and Banknote Magazine, Vol 16 No. 4:12.



Figure 14: - 1981 2 Cent – Struck Multiple Times in Collar <u>Partial Collar/ Out of collar/ Broad-struck / Off Center Coin Errors</u>

Partial collar, out of collar, broadstruck and off-centre coin errors are collected here into one category as they occur largely due to the same reason - partial or improper engagement with the collar die.<sup>22</sup> It is not unusual for a coin noodler to find one of these types of errors, but most often they are rejected at the security companies as they get separated during the rolling and bagging process because they are not the usual size or shape. The authors are aware of many people finding partial collar 5c and minor broadstrikes in security bags. One only needs to take a quick look at online auction sites to realize that 21<sup>st</sup> Century 5 cent broadstrikes are common. These types of 5 cent coins can be worth around \$50, while other denominations can be worth more depending on grade and the degree of the error. An off-centre dollar like the one in Figure 15 would be worth several thousand dollars.



Figure 15: Off Centre Dollar Coin Error (ND) 1985-1998

<sup>22</sup> Herbert, Alan (2002): 177

## Where to Now?

If you have reached this point and you are still interested then it is time to get looking. Start off with the change in your wallet, crack open the kids' money boxes (hopefully they won't notice) and think about heading in to the bank to do a bulk withdrawal of change. In the beginning at least you will get tired eyes and a sore neck but as soon as you find your first error or variety or upset coin or even your first 2000 \$1/10c mule, you will get that singular rush of adrenaline the seasoned coin noodler knows well. Welcome to our world - now you're hooked!

# About the Authors

Kathryn and Mark are the authors of the Australian Coin Collecting Blog (http://www. australian-coins.com), owners of The Purple Penny (http://www.thepurplepenny.com) and regular contributors to the Australasian Coin and Banknote Magazine. They have a particular interest in error coins, how they are manufactured, and love to collect unusual types of errors. They also scan their change any chance they get hoping for a unique error.

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# Serendipitous noodling<sup>1</sup>

# **Tyron Pigors**

On Sunday 27th November 2016 in the most bizarre circumstances I discovered an amazing 20 cent error coin inside a 2016 'RAM 50th Anniversary of Decimal Currency Changeover' 20c Mint Roll. It is a beautiful piece with a tilted partial collar. It appears to be the first example known, and the fact it is in a special release mint roll is extraordinary since such errors were supposed to be a thing of the past.

I have been a collector of world banknotes and coins for the last 10 years, and only started collecting Australian coins 6 months ago. I heard about the mint sets before they were released. I decided to buy 10 sets and later resell 8 of them at a (hoped for) profit to cover my costs. Things went according to plan with several sales after the release in late October, until I tried to pack a set into a post office box to post to its buyer. While trying to insert the package in its bulky bubble wrapping, I tore the box. Somewhat annoyed, I tried to pack it in another box and moved into the bathroom as it provided better light. I struggled again to fit the coins in (clearly bought the wrong box), only to discover the bathroom counter had water on it and the bottom of the box was wet.

In frustration I tried to clean it up, only to knock the box onto the bathroom floor. The 20c roll split revealing some of the contents. Immediately, I noticed the error coin. It is hard to describe how I felt at the time given the circumstances.

I knew it was something special. Some quick checking on coin posts and with friends and the dealer from whom I bought the rolls brought intense feedback and debate about the value of this coin, and the circumstances in which it could have been produced. It led me to seek further clarity from the Royal Australian Mint and the NAA. It was found to be a tilted partial collar error coin - a first of its kind in these style coins.

It is common for these types of errors to have some sort of bulge or deformity, enough to be visible in a stack of coins, yet this coin resembles a normal coin in a stack. Presumably this is the reason it snuck through and ended up in a mint roll. I am amazed at how lucky I was to find it!

<sup>1</sup> Editor's note: We could not resist the opportunity to include this exampling of noodling in practice!

#### Tyron Pigors



# Satrapal Coins in the Collection of the Australian Centre for Ancient Numismatic Studies: Tiribazus, Pharnabazus, and Mazaeus

#### John Shannahan

#### Abstract

Coins minted by fourth century BCE Persian officials form a wonderful complement to the literary sources of the period. Three examples are discussed in this paper. The first, minted by Tiribazus, is from the only series which can unquestionably be attributed to the man known from literary evidence. Its unique reverse type is shown to reflect a powerful Achaemenid image often found on monuments in Iran. The second example was minted by Pharnabazus and draws on Greek artistic traditions. It was minted while Pharnabazus planned to invade Egypt in the 370s, and may have utilised a type familiar to mercenaries who also fought in Sicily. The third example returns to Achaemenid imagery on coins through the career and minting activity of one of the most remarkable officials of the Persian Empire: Mazaeus. Mazaeus's Cilician coins, like Tiribazus's, are argued to disperse messages of control and order for the Achaemenid administration.

#### Key words

[Tiribazus] [Pharnabazus] [Mazaeus] [Cilicia] [Achaemenid Empire] [satraps]

#### Article

Satrapal coins, issued by the governors of the Achaemenid Empire (ca. 550 – 330 BCE), are well known to scholarship. While the imperial coinage of the Empire remained *darics* and *sigloi*, in the late fifth and early fourth centuries generals and governors in the West experimented with types differing drastically from the traditional royal or 'heroic' archer. New issues displayed satraps' heads with Athenian owls,<sup>1</sup> ships' prows,<sup>2</sup> warriors' heads,<sup>3</sup> and lions.<sup>4</sup> Indeed, the relationship of these issues to the Persians' imperial coinage and other local issues is a vexed question.<sup>5</sup> The broad definition of satrapal coinage adopted here includes coins minted in Persian domains attributable

<sup>1</sup> E.g. BM 1947,0706.4.

<sup>2</sup> E.g. BM 1892,0703.1.

<sup>3</sup> E.g. below, section 2.

<sup>4</sup> E.g. below, section 3.

<sup>5</sup> E.g. Mildenberg (2000); cf. Gitler (2003): 4-5.

#### John Shannahan

to Persian officials by their legends and/or iconography.<sup>6</sup> This paper publishes three examples from the collection of ACANS. All originate from Cilicia in southern Turkey. The iconography of each coin will be discussed in relation to the historical context. In the fourth century BCE Cilicia was a base of operations for Persian navies and armies, a key region through which individuals would journey on their way to the Persian court, and an area where revolt against the Persians was incited. The coins under discussion are therefore valuable evidence for an important region of the western Achaemenid Empire and its history.





### 1. Soli, Cilicia. Minted by Tiribazus ca. 386-381 BCE

*Obv.* Baal standing, frontal, himation over his left shoulder and lower limbs; left arm resting on a sceptre capped with flower. Bird (eagle?) above extended right hand; border of dots. To left,  $\Sigma O$ ; to right, Aramaic *TRBZW* = Tiribazus. *Rev.* Torso of bearded male, nude, facing right, set on winged disc; wings spreading horizontally from disc; tail fans out below; coiled tendrils extend symmetrically on either side; head capped with headdress and with spherical ornaments on top; left arm crooked, holding lotus flower; right hand raised to head height holds wreath; all surrounded by incuse circle.

Stater. AR 10.64g. CNG 377 (2016) 152. ACANS 16A23. (Figure 1).

The Cilician issues of Tiribazus are among the most famous satrapal coinages.<sup>7</sup> He was, if one looks through the numismatic literature, one of the most prolific Persian minters. Among the types attributed to Tiribazus are figures of Heracles or Aphrodite (obverse), and a satrap's head (reverse).<sup>8</sup> The attribution of these types to Tiribazus is, however, questionable, for it depends on two ambiguous examples.<sup>9</sup> They each show Heracles on the obverse and a satrap's head on the reverse, with the legend TEIPIBAZOY. These are the only coins showing Tiribazus's name in Greek – all other examples use Aramaic –

<sup>6</sup> Bodzek (2015): 64.

<sup>7</sup> Harrison (1982): 304-15; Cahn (1989): 104; Le Rider (1997): 152-53, 156-57; Casabonne (2004): 188-93.

<sup>8</sup> Casabonne (2004): Tiribaze Series 2.

<sup>9</sup> Bibliothèque nationale de France, département Monnaies, médailles et antiques, Babelon 158A = *SNG* France 2-Cilicie 232; Winzer (2005): nos. 10.4-10.5.

and indeed are the only known Heracles/satrap's head coins with an individual's name. The example in the Bibliothèque nationale de France was regarded as of a "style barbare" by Levante,<sup>10</sup> and "de fabrique barbare et d'époque postérieure" by Babelon.<sup>11</sup> Le Rider was unsure that this coin was in fact struck by Tiribazus.<sup>12</sup> Others have not found the legend problematic, and note that Babelon claimed to have seen "une pièce de bon style."<sup>13</sup> If these coins are removed from consideration as a result of their questionable style and unusual legend, there seems no compelling reason to place the Aphrodite and Heracles head coins with Tiribazus. The only series which can certainly be attributed to Tiribazus is that under discussion here: the coins showing Baal and the figure in the winged disc.

Literary evidence allows us to create a thorough map of his career. Plutarch characterises Tiribazus as a man whose fortunes at court frequently rose and fell.<sup>14</sup> His cavalier attitude, for example, led him to don the king's robes against the customs of the Persians – the king reportedly quipped at that point, "I permit you to wear the trinkets as a woman, and the robes as a madman."<sup>15</sup> He first appears in the sources as hyparchos of Armenia.<sup>16</sup> In the 390s, Tiribazus served as *strategos* in Asia Minor.<sup>17</sup> In 387/6 he read the King's Peace to the assembled Greeks.<sup>18</sup> In the 380s he was co-commander of the campaign against Evagoras on Cyprus, where he was accused of treasonously plotting with Evagoras.<sup>19</sup> He was eventually exonerated. Afterwards (the date is uncertain), Tiribazus was instrumental in securing peace with the Cadusians.<sup>20</sup> In the end, Tiribazus turned against Artaxerxes, who allegedly did not fulfil his commitment to marry Tiribazus into the royal family. Tiribazus and Darius plotted against the king, but were foiled. Tiribazus finally died in the late 360s, fighting against the king's guards.<sup>21</sup> Many of the details of Tiribazus's personality appear in Plutarch, and are therefore of dubious historical value. Nonetheless, the hints of character present in the literary sources provide a complement to the novelty of his Cilician coins.

While few of Tiribazus's Baal/figure in the winged disc coins have been found in hoards, hoard composition and findspots point to their production during his time as

- 16 Xen. An. 4.4.4.
- 17 Xen. Hell. 4.8.12.
- 18 Xen. Hell. 5.1.30-31.

21 Plut. Art. 27-29.

<sup>10</sup> SNG France 2-Cilicie 232.

<sup>11</sup> Babelon (1910): 383.

<sup>12</sup> Le Rider (1997): 152-53; Le Rider (2001): 209.

<sup>13</sup> Babelon (1910): 383. Cahn (1989): 104; Weiser (1989): 290; Debord (1999): 336-37. See also Bodzek (2011): 92 n. 509 – did Babelon see the example published by Winzer (above, n. 9)?

<sup>14</sup> Plut. Art. 27.5.

<sup>15</sup> Plut. Art. 5. On the importance of the robes, see also Xen. Cyrop. 8.3.13.

<sup>19</sup> Diod. Sic. 15.2.2, 15.8; Theopomp. (FGrH 115) F103.9.

<sup>20</sup> Plut. Art. 24; Sekunda (1988): 38-39; Van der Spek (1998): 252-53; Binder (2008): 316-21.

commander against Cyprus.<sup>22</sup> Diodorus Siculus also supports this conclusion.<sup>23</sup> Cilicia is identified as a crucial area several times in Diodorus's account (therefore providing Tiribazus with ample opportunity to commission his series), and at one point Tiribazus returns from court with 2000 talents in order to fund the remainder of the war.<sup>24</sup> While the number itself is untrustworthy, it may reflect a substantial investment in the campaign which resulted in the production of these coins.

We know a number of details about this Cypriot war, primarily from Diodorus. Its roots were in the 390s, when Evagoras of Salamis ceased paying tribute and embarked on an opportunistic campaign against his Cypriot neighbours.<sup>25</sup> They eventually asked Artaxerxes II for help,<sup>26</sup> which culminated in a decade long effort to pacify the island.<sup>27</sup> Tiribazus and Orontes were appointed commanders of the campaign ca. 387/6. The Persian force initially suffered setbacks as a result of Evagoras's piracy on supply lines. The piracy, in turn, led to mutiny among the mercenaries serving the Persians. The situation was severe enough that the Persian fleet was repurposed in order to address the problem.<sup>28</sup> Even Acoris, the king of Egypt, was involved – he sent Evagoras ships.<sup>29</sup> The turning point in the campaign was the naval battle off Citium, where Evagoras's fleet was destroyed.<sup>30</sup> Several years were then spent sieging Salamis. Orontes began to suspect that Tiribazus was in fact working with Evagoras during the prolonged negotiations that took place. He accused his co-commander of treason, which resulted in Tiribazus's imprisonment.<sup>31</sup> Orontes, left in sole charge, was equally ineffective. Evagoras eventually surrendered on the same terms as were originally negotiated with Tiribazus.<sup>32</sup> The date of the final agreement between Evagoras and the Persians to end the war is fixed by a Babylonian astronomical diary to 381.33

ACANS' stater was produced during this war. The coinage bears the ethnics of four mints: Issus (I $\Sigma\Sigma$ IKON/I $\Sigma\Sigma$ E $\Omega$ N), Mallus (MA $\Lambda$ /MAP), Tarsus (TEP/T), and Soli ( $\Sigma$ O). One group of coins has no mint designation.<sup>34</sup> Of the surviving 115 coins known

- 27 Diod. Sic. 15.9; Isoc. 9.64.
- 28 Diod. Sic. 15.3.1-3.
- 29 Diod. Sic. 15.3.4.
- 30 Diod. Sic. 15.3.4-6.
- 31 Diod. Sic. 15.8.
- 32 Diod. Sic. 15.9.1-2.
- 33 Van der Spek (1998): 250-51.

<sup>22</sup> See Casabonne (2004): 188-89.

<sup>23</sup> Harrison (2002): 306 has previously noted how complementary the literary and numismatic records are in this instance.

<sup>24</sup> Diod. Sic. 15.3.3, 4.2.

<sup>25</sup> Diod. Sic. 14.98; Ephorus (*FGrH* 70) F76; Yon and Sznycer (1991); Yon and Sznycer (1992); Yon and Childs (1997): 12-13; Kuhrt (2007): 384-85 n. 1.

<sup>26</sup> Diod. Sic. 14.98.2.

<sup>34</sup> No complete catalogue of these series has been attempted. Brindley (1993) studies examples from Issus. These coins are categorised in Casabonne (2004): 188, Tiribaze Series 1.

to me, most were minted in Mallus (41), followed by Issus (31), the unknown mint (21), Soli (13), and Tarsus (9). ACANS' example, therefore, is amongst the rarest of a small corpus of coins.

The obverse type showing Baal was consistent with other Cilician series of the late fifth/early fourth century. He was positioned in the same manner on coins showing Herakles with lion pelt and club on the reverse.<sup>35</sup> The iconography of Baal changed in the years which followed. Pharnabazus, also minting in Cilicia, showed Baal seated on a throne, with a warrior's head on the reverse.<sup>36</sup> Mazaeus likewise used the seated Baal on the obverse of his Cilician series with a variety of reverse types (see further below, section 3). The seated god is reminiscent of Alexander's tetradrachms featuring a seated Zeus with an outstretched hand and eagle. Baal and Zeus are both chief deities in their respective spheres of influence, and were often equated in antiquity.<sup>37</sup> Later Samarian issues, by way of comparison, depicted curious versions of the Persian king seated in a manner similar to Mazaeus's seated Baal, along with the Greek legend IEYE.<sup>38</sup> It comes as no surprise that the imagery of Baal and Zeus is shared. Indeed, the inspirations for Alexander's version of the seated god are complex and a question of some debate.<sup>39</sup> Baal's numismatic depictions could be readily associated with Zeus by any Greek encountering the coin, and was familiar to local Cilicians, Phoenicians, Syrians, and any other serviceman who might be paid with money issued from these series.

The reverse type of Tiribazus's series is, however, the most intriguing aspect. It is a Hellenised adaptation of the figure in the winged disc which frequently appears above royal figures in Achaemenid art.<sup>40</sup> No coins show a comparable depiction of the figure; the type on Tiribazus's coin is unique. The Samarian mint later produced coins which similarly drew inspiration from the Achaemenid figure in the winged disc, and they were also manipulated in strange ways. Samarian examples show four wings and one type removes the central disc in order to merge the figure's torso with a feathered tail.<sup>41</sup> For its part, the Tiribazus series rendered the figure with a nude torso and included a wreath held in the hand on the left. The wreath may be a carry-over from a prototype Cilician die.<sup>42</sup> Given the historical context of Tiribazus's coins (minted during a revolt on Cyprus), it adds overtones of victory to the type. The figure in the winged disc himself carried important connotations in Achaemenid contexts. Most commonly the figure is

<sup>35</sup> Examples from Issus are catalogued in Brindley (1993): Group 3. See also Harrison (1982): Appendix II.

<sup>36</sup> E.g. ANS 1944.100.54358. Casabonne (2004): 194, Pharnabaze Series 4.

<sup>37</sup> Brill's New Pauly s.v. Baal.

<sup>38</sup> Meshorer and Qedar (1999): 29 and no. 40.

<sup>39</sup> Zervos (1982); Price (1982). See, more recently, Le Rider (2007): 12; Kremydi (2011): 168; Thonemann (2016): 13.

<sup>40</sup> Consider, for example, Darius the Great's inscription at Behistun: Kuhrt (2007): 141-57; Schmidt (1957): pl. 3 (seal no. 2), pl. 6 (seal no. 14), pl. 7 (seal no. 22); BM 89132/1835,0630.1.

<sup>41</sup> Shannahan (2015). E.g. Meshorer and Qedar (1999): nos. 84, 100, 124.

<sup>42</sup> Harrison (1982): 208-09.

interpreted as Ahuramazda, the greatest god of the Achaemenid religion.<sup>43</sup> Darius, for example, attributes his authority and rule to Ahuramazda repeatedly in his inscription at Behistun.<sup>44</sup> Other interpretations see the figure as a kind of guardian angel.<sup>45</sup> Whichever way one looks at it, the symbol is closely related to the kingship.<sup>46</sup> The figure conveys a sense of investiture of power. If he is considered to be Ahuramazda, one cannot forget that the god was frequently invoked in inscriptions to combat forces of the Lie, and called upon to protect the land and the people from enemies.<sup>47</sup>

ACANS' example, besides being one of only 115 known examples and therefore a rarity in itself, is an unprecedented message of imperial authority in the midst of revolt. The type was never used again – it was clearly created for this specific context. This coin, minted in an empire which usually avoided the suppression of local traditions, is a fascinatingly complex outlier. Not only does the type reflect outside influence on Cilician mints, but it is supplemented by an assortment of literary evidence which is extremely uncommon for Greek history, let alone Achaemenid studies.

## 2. Tarsus, Cilicia. Minted by Pharnabazus, ca. 378/7-374/3 BCE.

*Obv.* Female head facing, 3/4 left, wearing multi-pendant necklace and earring(s) (only left shows); border of dots. *Rev.* Aramaic legend, PRNZW = Pharnabazus, to left Head of warrior (Ares?) facing right in Attic helmet with three-part crest and pointed visor with hook protruding above; to right  $\clubsuit$ .

Stater. AR 10.30g. Noble Numismatics 98 (2011) 5128. ACANS 12A09. (Figure 2)



Figure 2 - ACANS 12A09. Arethusa/Warrior Head stater minted by Pharnabazus.

This coin belongs to issue 3 in Moysey's grouping of Pharnabazus's silver stater emissions in Cilicia (there the types are termed lady/Ares),<sup>48</sup> and series 3 in Casabonne (where the

<sup>43</sup> See Root (1979): 169-71; Lecoq (1984).

<sup>44</sup> Kuhrt (2007): 141-57, sections 5-9, 13-14, 18, et cetera.

<sup>45</sup> See Shahbazi (1974); Shahbazi (1980).

<sup>46</sup> Shahbazi (1980) II: *Farnah* 'God given fortune symbolized': 121-22; Jamzadeh (1982): 96-98; Maras (2009): 52-57; Garrison (2013): 574-76.

<sup>47</sup> Skjærvø (2013): 554-55.

<sup>48</sup> Moysey (1986).

types are labelled Arethusa/helmeted head).<sup>49</sup> Like the series of Tiribazus, these types of Pharnabazus are matched by a fascinating historical context. Furthermore, the die links between Pharnabazus's issues and those of Datames confirm literary evidence provided by Cornelius Nepos in his *Life of Datames*.

Pharnabazus is well attested by the Greek sources; he is first mentioned by Thucydides.<sup>50</sup> Pharnabazus was satrap of Dascylium.<sup>51</sup> In Xenophon's Hellenica he first appears charging his horse into the surf to fight Alcibiades.<sup>52</sup> In the 390s he and King Agesilaus are said to have engaged in philosophical dialogue while the Spartans raided his satrapy.<sup>53</sup> Pharnabazus then played a leading role in the Persian victory over the Spartan fleet in 394, which culminated in a victory tour of Greece; Persian funds were then dedicated to maintaining a mercenary force at Corinth, supplying a new Corinthian fleet, and rebuilding the walls at Athens.<sup>54</sup> Soon after Pharnabazus married a daughter of Artaxerxes II.<sup>55</sup> He was then a commander of the ill-fated invasion of Egypt launched in either 389 or 385.56 Pharnabazus was placed in sole command of the next invasion of Egypt, which took several years to prepare, and was launched in 373.<sup>57</sup> Iphicrates the Athenian served as mercenary and advisor on the campaign, but it was also a failure.<sup>58</sup> It was probably during the preparations for this mission that the Samarian mint was activated; the first coins produced there bear Pharnabazus's name in Greek.<sup>59</sup> Pharnabazus disappears from the sources after the failure in Egypt. He was replaced by Datames.<sup>60</sup> Datames is another man well known to numismatists because of the debate surrounding a number of Cilician issues bearing the legend TRKMW;<sup>61</sup> some have argued that this legend refers to the local Cilician name of Datames.<sup>62</sup> It is, however, far from certain that Datames was the man producing those coins. TRKMW may in

51 Xen. Hell. 3.1.10, 4.1.15.

53 Xen. Hell. 4.1.31-39.

- 59 Meshorer and Qedar (1999): nos. 1-2.
- 60 Nep. Dat. 3.

<sup>49</sup> Casabonne (2004): 194.

<sup>50</sup> Thuc. 8.6.

<sup>52</sup> Xen. Hell. 1.1.6.

<sup>54</sup> Victory: Diod. Sic. 14.83.4-7; Xen. Hell. 4.3.11-13. Mercenaries: Harding (1985): doc. 22. Corinthian fleet: Diod. Sic. 14.84.5; Xen. Hell. 4.8.10. Long walls: Diod. Sic. 14.85.2-3; Xen. Hell. 4.8.9; Philochorus (FGrHist 328) F146.

<sup>55</sup> Xen. Hell. 5.1.28.

<sup>56</sup> Isoc. 4.140. Probably Pharnabazus was commander of the naval contingent: Cawkwell (2005): 163; Ruzicka (2012): 72-73. On the date of the expedition: Ruzicka (2012): 66-67 and n. 1.

<sup>57</sup> Diod. Sic. 15.41.

<sup>58</sup> Diod. Sic. 15.41-43.

<sup>61</sup> On the various readings of the legend, see Lemaire (1991): 203.

<sup>62</sup> See Ruzicka (2012): 103-04. On the coins see Harrison (1982): 321-36; Moysey (1986); Moysey (1989): 109 n. 3; Lemaire (1989): section 2; Lemaire (1991): 203-05; Bing (1998): 59 n. 55; Casabonne (2001); Wiesehöfer (2003).

fact refer to a local dynast known as Tarkumuwa; there are clear phonetic differences between the names Datames and Tarkumuwa.<sup>63</sup>



Figure 3 - ACANS 07A31. Obverse of coin minted by Pericles of Lycia between 380 and 360 BCE. It was probably modelled on an Arethusa prototype.

ACANS' coin then ties neatly into the historical record. The coin was minted in the 370s, while Pharnabazus was preparing for the 373 invasion of Egypt.<sup>64</sup> The obverse type, showing the nymph Arethusa, was based on Sicilian issues of Kimon.<sup>65</sup> Given the popularity of imitations of this type in the fourth century, it is unlikely that the Cilician mints had any especial connection to Arethusa herself.<sup>66</sup> The type was copied and adapted most curiously by Pericles of Lycia, who retained the positioning, hair, and dolphins of the original Arethusa, but changed the face to a masculine form and added a beard (Fig. 3).<sup>67</sup> Instead, the reason for the choice of Arethusa on the obverse was probably a result of the great number of mercenaries involved in Pharnabazus's invasion. Diodorus gives the figure of 20,000 mercenaries under the command of Iphicrates.<sup>68</sup> Moysey speculated that Dionysus I of Syracuse employed large numbers of mercenaries in his campaigns against Carthage and in support of Sparta.<sup>69</sup> It may then be that some of these mercenaries came to be in the employment of the Persians between ca. 378 and 369 when there was a lull in fighting in the West.<sup>70</sup> The Cilician mint officials may have selected the Arethusa type so that the pay issued by the Persians would be consistent with what the recipients knew from previous employment.

The reverse type, identified variously as a warrior's head or as Ares, conveys a martial tone complementary to the above interpretation of the obverse type. If these coins

<sup>63</sup> Lemaire (1991): 204.

<sup>64</sup> Casabonne (2004): 195-96.

<sup>65</sup> Naster (1989): 197. On the Sicilian coins, see Jenkins (1976): 40-41; Hoover, Meadows and Wartenberg (2010): 340-41, no. 1344.

<sup>66</sup> Moysey (1986): 13-14.

<sup>67</sup> See, for example, SNG v. Aulock 4249-53.

<sup>68</sup> Diod. Sic. 15.41.3.

<sup>69</sup> Moysey (1986): 14.

<sup>70</sup> Diod. Sic. 15.47.7, 70.1, 73.1-5. Moysey (1986): 14.

were issued in order to fund a mercenary army, a Greek-styled warrior would serve this purpose suitably. Unlike Tiribazus, Pharnabazus did not feel the need to introduce a Near Eastern image to the Cilician mints. Rather, the iconography of the reverse would meet the expectations of Greek mercenaries gathering in order to attack Egypt. Neither the obverse nor the reverse type, therefore, appears to contain the same layers of meaning as Tiribazus's Baal/figure in the winged disc series.

Once again we can appreciate the complementary nature of the numismatic and literary record. If subsequent series bearing the same Arethusa/warrior head types and the legend TRKMW can be attributed to Datames, the chronology of the numismatic evidence established by Moysey (1986) might confirm Cornelius Nepos's assertion that Datames succeeded Pharnabazus as commander of the next Egyptian campaign.<sup>71</sup> Nepos, writing lives of eminent commanders in the first century BCE, is not usually seen as a reliable chronographer, especially in relation to the difficult period of fourth century Achaemenid history. To have independent archaeological evidence in support of his *Life of Datames* is useful and makes the series of Pharnabazus and Datames a valuable source. If, on the other hand, the TRKMW coins belong to a separate Cilician dynast, the series of Pharnabazus with Arethusa/a warrior's head would be of equally great value as a continuation of a previously established satrapal type. On either interpretation of the legend, this issue of Pharnabazus clearly had such an impact that it, unlike the majority of satrapal coinage, was continued by the succeeding minting authority.

Tarkumuwa/Datames would go on to change his types as the political situation changed. Datames revolted against Artaxerxes II in the 360s, doing so after he was told that members of the king's court were becoming jealous of his success.<sup>72</sup> Tarkumuwa, as local dynast (if he was producing the TRKMW coins, and not Datames), would have been required to address the revolt. Datames is known to have moved through Cilicia to combat Thuys,<sup>73</sup> and later went past Cilicia into Cappadocia.<sup>74</sup> So Tarkumuwa would have been aware of Datames's activities in the preceding five years. As such, coins depicting the Mesopotamian god Anu and the anointment of a figure could have been a message that the regional deities were supporting Tarkumuwa.<sup>75</sup> Likewise, if Datames produced the TRKMW Anu coins, they would indicate the deity's support of him.<sup>76</sup> In any case, these coins of Pharnabazus shed light on his activities as commander of the 373 Egyptian expedition, in addition to providing precedent for the subsequent issues of Tarkumuwa/Datames.

<sup>71</sup> Nep. Dat. 3.5.

<sup>72</sup> Nep. Dat. 5.

<sup>73</sup> Nep. Dat. 2.

<sup>74</sup> Nep. Dat. 5.

<sup>75</sup> Briant (2002): 667. An example of the types in question is BM 1979,0101.1004 = SNG v. Aulock 5950.

<sup>76</sup> Moysey (1989): 109-10; Bing (1998): 56-73.



Figure 4 - ACANS 04A03. Baal/Lion attacking bull stater minted by Mazaeus. **3. Tarsus, Cilicia. Minted by Mazaeus, ca. 360-333 BCE.** 

*Obv.* Baaltars seated left, eagle in right hand, sceptre in left. To right, Aramaic B'LTRZ = Baaltars; to left, O; dotted border. *Rev.* Lion attacking bull kneeling left. Above, Aramaic MZDY = Mazaeus; below, Aramaic SM; linear border.

Stater. AR 10.89g. CNG Triton VII (2004) 322. ACANS 04A03. (Figure 4)

The third coin under discussion follows neatly from the historical information presented for the preceding two. The first coin was minted in the 380s under Tiribazus while he responded to a revolt; the second was minted in the 370s while Pharnabazus was planning to invade Egypt, before the same types were used by Datames/Tarkumuwa immediately before the satrapal revolts of the 360s;<sup>77</sup> the third coin was minted when Mazaeus was installed as satrap of Cilicia. This particular coin belongs to series 2, Group F in Casabonne.<sup>78</sup>

Mazaeus's career spanned several decades and monarchs. Possibly he was appointed by Artaxerxes III Ochus when he first took the throne in 359/8.<sup>79</sup> The first literary reference to him, however, comes in the year 351 when Mazaeus, alongside Belesys (satrap of Syria), was tasked with making war upon the Phoenicians.<sup>80</sup> He is identified as archon of Cilicia. The numismatic evidence reveals that at some point afterwards Mazaeus received a promotion, for subsequent series bear the legend "Mazdai [governor] of Trans-Euphrates and Cilicia."<sup>81</sup> He continued to be an important part of the Achaemenid administration until the conquest of Alexander the Great. He was one of the king's friends;<sup>82</sup> Darius III appointed him to defend the Euphrates crossing;<sup>83</sup> he commanded

<sup>77</sup> Weiskopf (1989); Moysey (1991); Hornblower (1990).

<sup>78</sup> Casabonne (2004): 213.

<sup>79</sup> Bing (1998): 66 n. 74.

<sup>80</sup> Diod. Sic. 16.42.1.

<sup>81</sup> E.g. SNG Levante-Cilicia 113-15. Briant (2002): 709; Weiskopf (1982): 498-500.

<sup>82</sup> Diod. Sic. 17.55.1.

<sup>83</sup> Arr. Anab. 3.8.

Persian cavalry at Gaugamela;<sup>84</sup> he was the man to gift Babylon to Alexander the Great;<sup>85</sup> he is said to have been the most powerful member of Darius's court.<sup>86</sup> Alexander rewarded Mazaeus by permitting him to retain his satrapy until his death in 328.<sup>87</sup>

Mazaeus minted coins in his own name in Cilicia, the Levant, and Babylon. The Babylonian examples show Mazaeus's name in Aramaic on the reverse.<sup>88</sup> The types follow Cilician prototypes and depict Baal on a throne, with the reverse portraying a lion walking to left. In Samaria Mazaeus's name was abbreviated to MZ and displayed on a variety of types.<sup>89</sup> These coins often drew on Persian iconography. The Persian royal figure might be shown in his chariot,<sup>90</sup> fighting beasts,<sup>91</sup> or seated on a throne.<sup>92</sup> MZ is also found on Samarian adaptations of the figure in the winged disc.<sup>93</sup> Especially in the latter example, the types Mazaeus employed drew on Near Eastern prototypes, and conveyed messages of imperial authority and power to the recipients. In his Cilician coinage Mazaeus utilised the longstanding obverse type showing Baal. On the reverse he showed several varieties of types showing lions.<sup>94</sup> On some, the lion attacked a stag, while on others the stag is replaced by a bull. In other examples, the lion and bull are shown above city walls. The remaining variation presents the lion alone, walking or crouched. ACANS' coin is an especially fine example with the reverse type showing the lion attacking a bull.

- 87 Arr. Anab. 3.16. Briant (2002): 850.
- 88 E.g. ANS 1944.100.72060.
- 89 E.g. Meshorer and Qedar (1999): nos. 74, 84, 96, 100.
- 90 As on Meshorer and Qedar (1999): no. 74. Cf. coins with the same image from Sidon: e.g. BM 1906,0712.53.
- 91 As on Meshorer and Qedar (1999): no. 74. See Persian examples of the same motif in Schmidt (1953): pls. 114, 196; Garrison and Root (2001): pl. 274a.
- 92 As on Meshorer and Qedar (1999): no. 100. See Persian examples of the same motif in Schmidt (1953): pls. 77-78, 98-99, 103-07.
- 93 Shannahan (2015): 30.

<sup>84</sup> Arr. Anab. 3.11; Diod. Sic. 17.59.5.

<sup>85</sup> Curt. 5.1.17-23. Briant (2002): 845-46.

<sup>86</sup> Plut. *Alex.* 39.6. This summary follows that of Bing (1998): 66 n. 74. See also the *Encyclopaedia Iranica* s.v. Mazaeus.

<sup>94</sup> On these coins and the following examples see Casabonne (2004): 211-15.



Figure 5 - Detail of ACANS 04A03 obverse, showing radiate crown of Baal.

The obverse type continued the depiction of Baal seated on a throne begun by Pharnabazus.<sup>95</sup> This type probably served as inspiration for Alexander the Great's own depiction of Zeus on his coins.<sup>96</sup> Of particular interest is the radiate crown visible on Baal's head (Fig. 5). Bing argued that the crown, in conjunction with the Achaemenid motif on the reverse (to which I will shortly turn), communicates "close associations of Tarsus with Persepolis and of Ba'al Tarz with Ahura Mazda."97 Having noted older arguments regarding the radiate head as "evidence for his [Baaltars's] identification as a god of the sky, or an astral or celestial deity at the time of Mazaeus," Bing proposes that the historical context of these coins can provide greater clarity as an explanation for the manipulation of the type.<sup>98</sup> In summary, Bing accepts Newell's conjecture that the radiate head of Baaltars adds a "celestial character."99 Given that Baaltars was traditionally linked with fertility and is identified with Tarhunzas, the Luwian storm god, the radiate Baaltars was probably a deliberate attempt to associate him with Ahuramazda.<sup>100</sup> In support of his proposition, Bing notes the celestial and solar imagery of Ahuramazda in the Classical sources. In Herodotus's Histories, Ahuramazda is the entire circle of heaven.<sup>101</sup> According to Plutarch, after executing Darius, Artaxerxes performs proskynesis to Helios and proclaims that Ahuramazda has punished the unrighteous.<sup>102</sup> The reverse type also appears in Bing's argument. The lion and bull motif appears twenty-eight times on the palace facades of Persepolis.<sup>103</sup> Most prominently it is displayed on the staircase of the apadana.<sup>104</sup> Its prominence has led several scholars to conclude that it is some kind of

- 98 Bing (1998): 63-65.
- 99 Bing (1998): 69.
- 100 Bing (1998): 69.
- 101 Hdt. 1.131.
- 102 Plut. Art. 29.7.
- 103 Bing (1998): 68.

<sup>95</sup> See above, n. 36.

<sup>96</sup> See above, n. 39.

<sup>97</sup> Bing (1998): 66.

<sup>104</sup> Schmidt (1953): pls. 19-20.

special emblem of the capital or perhaps represents royal power.<sup>105</sup> The lion and bull reverse type did, however, feature on earlier issues of Tarsus in the fifth century, so it did have a precedent in the region.<sup>106</sup>

These observations, when coupled with the historical context in which Mazaeus's minted ACANS' coin, provide valuable historical insights. Above, I briefly described the politically-charged types employed by Datames/Tarkumuwa in Cilicia. Mazaeus, in Bing's view, came to Cilicia immediately after the satraps' revolt of the 360s. His mission was to restore order to the region. The display of powerful Achaemenid images on his coins therefore conveyed a message of restoration of Persian authority to the area and provided a link between the centre of the Empire – Persepolis – and the satrapal centre of the area, Tarsus.<sup>107</sup>

ACANS' example therefore represents, alongside the coin of Tiribazus, a wonderful case study in the messages the Persians would circulate on their coinage. Both examples clearly reflect the ability of coins to propagate messages for the administration. Furthermore, the Mazaeus coin provides evidence where the literary record is silent. No mention is made in the Greek or Roman sources of Mazaeus's arrival in Cilicia, nor of his efforts to settle the area. If Bing's hypothesis is correct, however, the numismatic evidence reflects a clear means of sending a message of control. Given Mazaeus's use of Achaemenid motifs later in his career, also described above, it is difficult to believe that his Cilician types did not have meaning. From an historical perspective, this coin – in addition to the other numismatic evidence for this man – provides a glimpse into the methods of an individual who was close to one of the most famous men in history, Alexander the Great. The duplication of Mazaeus's Cilician types in Babylon, and the remarkable fact that Mazaeus was permitted to continue minting his types after the arrival of Alexander, support the literary record regarding his negotiations and retention as one of the highest ranked officials in the later Achaemenid Empire.

Combined, ACANS' coins are useful illustrations of the power of numismatics to inform our understanding of history. In each case, the coins can be employed not only for teaching purposes, but in themselves have allowed scholarship to expand its understanding of the Achaemenid Empire. With so few impartial sources for the Achaemenids, it is critical that the numismatic evidence for the satraps be exploited in order to further our understanding of their methods and behaviour. In the case of Tiribazus and Mazaeus, they concretely show the means by which Persians employed coins as tools to disperse messages. In the case of Pharnabazus, they underscore the essential pragmatism of generals fighting with Greek mercenaries. Pharnabazus was

<sup>105</sup> Bing (1998): 68 n. 82; Root (1979): 236.

<sup>106</sup> E.g. *BMC* Lycaonia, 164 no. 11.

<sup>107</sup> Bing (1998): 66.

not so obsessed with employing Achaemenid propaganda or iconography that he lost sight of the desires of his soldiers. By relying on familiar types – a Sicilian obverse and a warrior in a Greek helmet on the reverse – he ensured that his mercenaries would be comfortable using Persian coins. Furthermore, he may have inadvertently revealed the origins of his mercenaries, if Moysey's conjecture that these men came from service in Sicily to Cilicia is correct.<sup>108</sup> Finally, these coins allow us to continue to explore the rich numismatic traditions of Cilicia and see how its mints were utilised by the Persians and how they adapted to Persian presence.

# Author

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# Australian Banknote Serial Numbering

## **Mick Vort-Ronald**

# Abstract

Australian banknote serial numbering for over 100 years observed the principle that no two notes should ever bear the same number, but there were exceptions. This story explains their sequences and indexes serial number prefixes to easily identify all notes printed since 1910.

# Keywords

[Australian banknote] [serial numbering]

## Introduction

Serial numbering has always been one of the most important features on banknotes. A serial number individualises each note, indicates when printed and acts as a security device against forgery and theft. Collating and listing serial number prefixes in alphabetical order enables any banknote in the last 100 years to be identified solely by its serial number.

Serial numbers have either a prefix, suffix or both and for around 75 years contained one million numbers per prefix e.g. from 000001 to 1000000. In about 1974 the number 1000000 was discontinued and notes were numbered from 999999 in descending order to 000000, with the sheet numbered 000000 either later destroyed or donated to charities for auction.

The serial numbering of Australian banknotes began over 100 years ago with the principle that no two banknotes would ever bear the same serial number. However, there were several instances of duplication and overlapping of serial numbers in the predecimal series, and a plethora of collector issues by Note Printing Australia featuring some duplication and many notes with out-of-sequence serial numbering.

Overlapping occurred when serial numbers from one series extended beyond stated serial number ranges into another series.

## Superscribed notes

The first Australian banknotes (as distinct from private bank issues) were the superscribed series from 1910 to 1913. They were unissued notes of 15 banks and the Queensland Government overprinted vertically by the Commonwealth Treasury with "AUSTRALIAN NOTE" and a promise to redeem in gold. These banknotes were

issued after the issue of banknotes was taken from the control of private issuers and the Queensland Government. It took more than two years for the Commonwealth Treasury to design and produce the first of the new Commonwealth of Australia issues.



Figure 1, Union Bank of Australia superscribed £1 note. Image: author.

The first serial number letter prefixes used on superscribed notes were  $\pounds 1$  "A",  $\pounds 10$  "B",  $\pounds 5$  "C" and  $\pounds 20$  "D". I have deliberately illustrated the  $\pounds 1$  note in Fig. 1 because it has the serial letter "A" and is very worn, demonstrating its prolonged period in circulation. It is so worn that it feels like a limp piece of rag. All Australian banknotes were printed on "rag paper". By the time the  $\pounds 20$  note series began, the first 1,000,000 of the  $\pounds 1$  notes had been issued and so the prefix letter "E" was used for the next run of  $\pounds 1$  notes; next came the  $\pounds 100$  notes with prefix "F" and  $\pounds 50$  with "G". Superscribed  $\pounds 1$  notes then continued with letters H, J, K and L.

#### Commonwealth treasury issues



Figure 2, Collins/Allen 10/- M 000054. Image: author.

Australian government-designed notes first appeared after 1 May 1913. Serial letters M to N were allocated to the 10/- notes, P to T for £1, U and V for £5, W for £10, X for £20, Y for £50 and Z for £100. The £1,000 note appears to be an afterthought using the pre-printed prefix "2A" (Fig. 3). It was only in public use for a short time until 1915 and then used for inter-bank settlements. The first 500 10/- notes were "presentation notes" balloted mostly to members of parliament, who paid for them.



Figure 3, serial number of Kell-Collins €1,000 note. Image: Rare Coin Co.

The first ten shilling banknote serial numbers with the prefix letter "M" were printed in red (Fig. 2) and later in black, followed by the prefix "N". Forgeries of the first ten shilling notes prompted the mosaic overprinting of the backs, and "half sovereign" was printed in red on the four borders on the front of the notes. With only two million ten shilling notes possible using "M" or "N" as a prefix, other ways had to be devised to continue using the same letters. The next two million ten shilling notes were given the suffix "M" or "N" and the next two million M (number) M and N (number) N. Numbers then commenced with the prefix M and a different letter suffix and then N with a different letter suffix. For a short period notes of Collins/Allen and Cerutty/Collins bore serial numbers from a different numbering machine designated as "seriffed" (bottom note in Fig. 4). Bold type was used for the balance of the series.



Figure 4, the five serial number types of Collins/Allen 10/- notes. Image: author.



Figure 5,  $\pounds 1$  Collins/Allen notes with red and blue serial numbers. Image: author.

One pound notes commenced with "P" prefix serial numbers in red, followed by Q, R, S and T with small blue numbers (Fig. 5).



Figure 6,  $\pounds 1$  Collins/Allen notes with large black serials. Image: author.

Collins/Allen £1 notes then continued with large seriffed black serial numbers with the prefix "T", followed by letters A to T as suffixes, then continued with the prefix letter "A" and different suffixes. This system of changing the prefixes continued into the Cerutty/ Collins series ending with "E" prefix and suffix 'C" (Fig. 6).



Figure 7, E. S. & A. emergency £1. Image: author.

A year or so after the £1 notes commenced there was a shortage of note paper from England due to WW1. Two types of emergency £1 notes were locally produced. The first of these was an unused 1894 English, Scottish & Australian Bank Limited £1 overprinted in a similar fashion to the previous superscribed notes, but without the decorative panels and only two serial numbers instead of three, using serial numbers A (number) A and B (number) B, (Fig. 7).



Figure 8, Emergency "Rainbow" pound. Image: author.

The second emergency issue was dubbed the Rainbow Pound and it used serial letters C No. (number) C and D No. (number) D, followed by E (number) E and F (number) F (Fig. 8). It circulated simultaneously with the Treasury (mining scene) notes, but was later withdrawn due to its simple design and apparent ease to forge.

Treasury-issued £5 notes of Collins/Allen commenced with prefixes "U" and "V", then suffixes "U" and "V" continuing into the Cerutty/Collins signatures before commencing with the prefix letter U (number) A and ending with U (number) J. Forgeries of the first non-mosaic notes later prompted a mosaic of fives to be printed on the backs.

Treasury-issued £10 notes commenced with prefix "W" in Collins/Allen issues then into Cerutty/Collins notes with "W" as a prefix and then "W" as a suffix. For a very short period the series continued with U over 0 prefix, which remained unconfirmed for decades, with only one such note known to have survived (Fig. 9).



Figure 9, Cerutty/Collins U/0 prefix €10. Image: Noble Numismatics.



Figure 10, Collins/Allen €20, prefix letter X. Image: author.

Treasury-issued €20 notes commenced with prefix "X" for Collins/Allen (Fig. 10), then again with Cerutty/Collins notes before continuing as suffix "X" (Fig. 11).



Figure 11, Cerutty/Collins £20, suffix X serials. Image: author.

Treasury-issued £50 notes commenced with prefix "Y" for Collins/Allen and Cerutty/ Collins notes, then 'Y" suffix in Cerutty/Collins before reverting to "Y" prefix and numerals in larger font.

Treasury-issued £100 notes commenced with two styles of "Z" prefix in Collins/Allen, one in blue and one in black, then Z suffix in Cerutty/Collins followed by "Z" prefix.

Whenever suffix letters and numerals were used in the £10 to £100 notes they were in "bold" style, rather than seriffed.

#### **Commonwealth Bank issues**

From 1923 new "Harrison" note designs were issued by the Note Issue Department of the Commonwealth Bank of Australia. They were designed by the Australian Note Printer, Thomas Samuel Harrison, recruited by the Australian Government from Waterlow and Sons in England to set up the Note Printing Branch in Melbourne in 1913.



Figure 12, Harrison £1 issues, large and small prefix, Harrison imprint and no imprint. Image: author. The £1 notes used large letter prefixes H, J and K and the "T.S. Harrison" imprint at the bottom, followed by notes without the imprint (Fig. 12). Harrison  $\pounds 5$  notes commenced at Q over 0 in small prefixes for Kell/Collins notes, and ended at Q over 29 in large prefixes for Riddle/Sheehan notes. Some early issues had Note Issue Dept. signature titles and others Commonwealth Bank titles.



Figure 13, Note Issue Dept. title specimen £10. Image: Snow Reinke, photo author.

Harrison £10 notes commenced at U over 1 for Kell/Collins notes and ended at U over 4 for Riddle/Sheehan (gold) notes. These were all "Commonwealth Bank" issues with only one specimen note known with the "Chairman of Directors Note Issue Dept." title (Fig. 13).



Figure 14, Riddle/Sheehan 10/-, thick and thin Sheehan signatures. Image: author

The first Harrison issues had small prefixes and the later issues of 10/- to  $\pounds$ 5 large prefixes in the same size and font as the serial numbers (Fig. 14). In the 10/- and  $\pounds$ 1 notes of Riddle and Sheehan the earliest notes had a thick signature for Sheehan, which was later changed to a thin signature to match that of Riddle (Fig. 14).



Figure 15, Armitage/McFarlane 10/- star note. Image: author.

A different style of numbering was used for the legal tender issues from 1933, but still consisted of a single letter over numerals prefix. From 1948 star replacement notes (Fig. 15) were used to replace spoils, firstly with the same prefixes as those being replaced and later by star notes with their own serial number ranges. 10/- and £1 stars were used in King George VI and Queen Elizabeth II issues and £5 stars only appeared late in the Elizabeth II notes. The Queen Elizabeth II general issues from 1953 used two letters over two numbers prefixes with 10/- commencing AC, £1 HA, £5 TA and £10 WA.

During this series the Reserve Bank of Australia (R.B.A.) was created by the Reserve Bank Act of 1959 and came into operation on 14 January 1960 as Australia's central bank. Banknotes were thereafter issued by the Note Printing Branch of that bank, and later by Note Printing Australia, a wholly owned subsidiary of the R.B.A.



Figure 16, last of Queen Elizabeth issues from 25th Anniversary portfolio. Image: Stanley Gibbons.

The 800 sets issued by Note Printing Australia for the 25<sup>th</sup> anniversary of decimal currency (Fig. 16) had four pre-decimal notes with matching end numbers, with two of the denominations exhibiting last prefixes beyond those issued for general circulation,
and one each of the first prefixes of decimal \$1, \$2, \$10 and \$20 notes with similar matching end numbers. Later, triple anniversary sets were issued with the first \$5, \$50 and \$100 notes with matching end numbers. The pre-decimal notes were from the last 1,000 notes printed, and the decimal notes from the first 1,000.

#### **Decimal issues**



Figure 17, Coombs/Wilson \$1 AAA 000107. Image: author.

Decimal notes commenced on 14 February 1966, with \$1 at AAA, \$2 FAA, \$10 SAA and \$20 XAA. \$5 notes commenced in 1967 at NAA, \$50 in 1973 at YAA and \$100 in 1984 at ZAA. Fig. 17 is a low numbered note not among the 25<sup>th</sup> anniversary notes, having been extracted prior to the creation of the sets. Letters I, O, M and W were initially not used, with M and W later used for \$10 and \$50 notes respectively. Some prefixes were also later re-used in other denominations such as "R" from \$10 notes and "A" from \$1 notes for the \$20 denomination.



Figure 18, All 50 decimal star notes serial letter prefixes, ex-author's collection. Star replacement notes were issued from 1966 to 1971, using ZAA-ZAQ for \$1 notes, ZFA-ZFS for \$2, ZNA-ZND for \$5, ZSA-ZSJ for \$10 and ZXA for \$20. Letters I, O, and M were not used. The star note serial numbers bore no relation to the serial numbers of the notes they replaced (Fig. 18).



Figure 19, Gothic 18 and OCR-B serial numbering on paper \$10 notes.

The first decimal notes were numbered in "Gothic 18" style, which later changed to OCR-B style to enable better machine reading of serial numbers (Fig. 19).

### **Collector** issues

In 1988 and 1992 with the introduction of \$10 Bicentenary and \$5 polymer notes respectively, notes with the first date of issue overprint were produced in folders at a premium for collectors.



Figure 20, 80th anniversary of first Commonwealth note. Image: author.

In 1993 the first in a large range of special issues was produced for collectors by Note Printing Australia for the 80th anniversary of the first Commonwealth note shown in Fig. 2. It was a paper \$20 note with the serial numbers printed in red, the left side number in the same font as the first 10/- notes in 1913 (Fig. 20).



Figure 21, Last and First portfolio paper and polymer notes with matching serial numbers. Image: author. Fig. 21 illustrates \$10 notes from the Last and First portfolio series issued from the \$10 in 1993 to the \$100 in 1996. The same serial numbers were in red on each note with the paper notes bearing polymer-type serial numbers.

There were many other collector notes issued, some in portfolios with stamps, one with a phone card and another with a coin. Some notes were overprinted and/or had out-of-sequence or special serial numbering and an annually dated low-number series (Fig. 22).



Figure 22, Australian modern numismatic banknotes.

All denominations of general circulating notes both paper and polymer were sold as full sheets, blocks and pairs and some paper \$5 notes were sold in 1992 in uncut form with special XXV prefixes to commemorate 25 years of the \$5 note.

The first in the New Note Series (NNS) of polymer notes was the \$5 in 1992, which used prefixes AA00 to AB19 with Fraser/Cole signatures (Fig. 23).

In 1993 the NNS \$10 notes commenced a new numbering system to include the year of printing, e.g. AA93, and this system is still in use today for all denominations (Fig. 24).



Figs. 23 and 24, \$5 numbering for 1992 and 1995.

The next signature combination in the \$5 note was Fraser/Evans and its numbering began with BA instead of AA, ranging from BA93 to EA93. This was due to the previous use of AA93 to AB19 in the first of the polymer \$5 notes. In 1995 the \$5 note was modified with brighter colours, orientation bars and a different style of the denomination "5". About 200,000 were printed with prefix AA (due to the issue of collector issues, Fig. 24), but the official first prefix is BA95. All \$5 notes each year since then have commenced at BA. The commemorative Federation \$5 note in 2001 had its serial number printed vertically.

The numbering of the NNS polymer notes normally does not include serial letters N to Z as the second prefix letter, with notes being numbered AA to AM, then BA to BM, CA to CM and so on. The exceptions to this practice were runs of \$5 and \$100 test notes that used from N to Z as a second prefix letter for survey purposes.



Figure 25 and 26, NNS polymer serial numbering "Buch Grotesk" and "Modern Extended".

As with the Bicentenary \$10 note in 1988, all polymer notes have two different styles of serial numbering (Figs. 25 and 26), with the exception of the \$5, which only has one number. The left side thicker number is in "Buch Grotesk" style and the right side number "Modern Extended".

Over the last 105 years there has been a very wide and interesting range of banknotes issued in Australia with the earliest surviving lower-denomination issues being very rare in higher grades. Some issues such as superscribed  $\pounds 50$  and  $\pounds 100$  notes are unknown in private hands while there may only be one or two surviving notes known to still exist for some other notes. No superscribed  $\pounds 100$  notes were preserved.

A relatively small total of Australian banknotes still exist despite the huge range and quantities of banknotes produced over the past century, but in nearly all instances, they can be identified solely by their serial numbers, as outlined in the appendix.

The decimal serial number listing appendix has not been previously published and is particularly important in that it integrates the circulating numbers with all the different NPA special issues so that collectors can tell if a note is from general circulation or extracted from a collector folder, portfolio or uncut sheet.

The Next Generation \$5 banknote, expected to commence from 1 September 2016, will begin to completely replace the existing notes, heralding the beginning of a whole new exciting chapter in the history of Australian banknotes.

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## Author

Mick has written and self-published over 95 books from 1979, mostly about banknotes, but also several each about bank branch, police station and family histories and a variety of other subjects. These include: Australian Superscribed Banknotes, Australian Banknotes 2<sup>nd</sup> edition, Australian Decimal Banknotes- paper issues, Australian Modern Numismatic Banknotes and Australian Banknote Pedigrees (two editions), and cf. www. yp-connect.net/~vortronald. He has been a monthly contributor of articles to Australian coin magazines for over 40 years and received the Tasmanian Numismatic Society Lockwood award and medal and the Paul Simon award and medal for his outstanding contributions to numismatics. He was elected as a Fellow of the Numismatic Society of S.A. in 1985, serving six terms as the society's President and ten as Treasurer, and was President of the Northern Yorke Peninsula Coin Club / Yorke Pensinsula Collectables Club for 19 years.

# Appendix.

# Serial Number Prefixes of Australian Banknotes 1910-2015.

Pre-Decimal

Single letter prefix	£	
А	1	Superscribed
В	10	Superscribed
С	5	Superscribed
D	20	Superscribed
Е	1	Superscribed
F	100	Superscribed
G	50	Superscribed
Н	1	Superscribed
H, J, K	1	Miller-Collins
J, K, L	1	Superscribed
М	10/-	Red No. Collins-Allen
М	\$20	1-5500 80 <sup>th</sup> anniversary
M, N	10/-	Collins-Allen
Р	1	Red numbered Collins-Allen
Q to T	1	Blue numbered Collins-Allen
Т	1	Black numbered Collins-Allen
U	5	Collins-Allen
U, V	5	Collins-Allen
W	10	Collins-Allen
W	10	Cerutty-Collins
Х	20	Collins-Allen
Х	20	Cerutty-Collins
Y	50	Collins-Allen
Y	50	Cerutty-Collins
Z	100	Collins-Allen
Z	100	Cerutty-Collins

Single letter suffix	£	
-A to -L	1	Collins-Allen, omitting "I"
-M to -N	10/-	Black numbered Collins-Allen
-P to -T	1	Collins-Allen
-U, -V	5	Collins-Allen
-V	5	Cerutty-Collins
-W	10	Cerutty-Collins
-X	20	Cerutty-Collins
-Y	50	Cerutty-Collins
-Z	100	Cerutty-Collins
Prefix and suffix letter £		<b>P</b>
A-A to B-B	1	Emergency ES&A
A-B to A-M	1	Collins-Allen
A-H to A-U	1	Cerutty-Collins
B-C to B-T	1	Cerutty-Collins
C-A to C-T	1	Cerutty-Collins
C-C to D-D	1	Emergency Rainbow "No."
D-A to D-T	1	Cerutty-Collins
E-A to E-C	1	Cerutty-Collins
E-E to F-F	1	Emergency Rainbow
M-A to M-K	10/-	Collins-Allen
M-B to M-F	10/-	Collins-Allen seriffed serials
M-C to M-F	10/-	Cerutty-Collins seriffed serials
M-C to N-Z	10/-	Cerutty-Collins
M-M, N-N	10/-	Collins-Allen
U-A to U-J	5	Cerutty-Collins

One letter over numeral/s £

A/0 – A/23	10/-	Miller-Collins
A/0 – A/2	10/-	Coombs-Watt star
A/3 – A/9	10/-	Coombs-Wilson Geo. star
A/10 – A/74	10/-	Coombs-Watt
A/24 – A/51	10/-	Kell-Collins
A/51 – B/36	10/-	Riddle-Heathershaw
A/75 – B/49	10/-	Coombs-Wilson Geo VI
B/36 – B/43	10/-	Riddle-Sheehan "gold"
C/0 – C/20	10/-	Riddle-Sheehan
C/21 – C/69	10/-	Riddle-Sheehan overprint
D/0 – D/98	10/-	Riddle-Sheehan orange
D/98 – F/24	10/-	Sheehan-McFarlane
F/24 – G/84	10/-	Armitage-McFarlane
G/50 – G/74	10/-	Armitage-McFarlane star
G/85 – G/94	10/-	Coombs-Watt
G/95	10/-	Armitage-McFarlane star
G/96 – G/99	10/-	Coombs-Watt star
H/0 – H/60	1	Miller-Collins
H/0 – H/99	1	Armitage-McFarlane
H/61 – H/79	1	Kell-Collins
H/69 – J/2	1	Kell-Heathershaw omitting "I"
I/0	1	Armitage-McFarlane star
I/0 – I/9	1	Coombs-Watt star
I/10 – I/99	1	Coombs-Watt
J/0 – K/96	1	Armitage-McFarlane
J/2 – K/72	1	Riddle-Heathershaw
K/45 – K/94	1	Armitage-McFarlane star
K/72 – K/98	1	Riddle-Sheehan gold
K/97 – K/99	1	Coombs-Watt
L/0 – N/71	1	Riddle-Sheehan legal tender
N/71 – P/76	1	Sheehan-McFarlane
P/76 – P/99	1	Armitage-McFarlane
Q/0 – Q/7	5	Kell-Collins
Q/7 – Q/11	5	Kell-Heathershaw Note Issue Dept.
Q/7 - Q/11	5	Kell-Heathershaw Commonwealth Bank
Q/11 - Q/12	5	Riddle-Heathershaw Note Issue Dept.
Q/11 – Q/26	5	Riddle-Heathershaw Commonwealth Bank
Q/26 - Q/29	5	Riddle-Sheehan gold
R/0 – R/10	5	Riddle-Sheehan tender, pink face of King
R/10 – R/20	5	Riddle-Sheehan tender, white face of King

One letter over numeral/s	£	
R20 – R/34	5	Sheehan-McFarlane
R/34 – R/84	5	Armitage-McFarlane
R/85 – S/26	5	Coombs-Watt
S/27 – S/57	5	Coombs-Wilson Geo VI
U/0	10	Cerutty-Collins
U/1	10	Kell-Collins
U/1 - U/4	10	Riddle-Heathershaw
U/4	10	Riddle-Sheehan gold
V/0 - V/3	10	Riddle-Sheehan legal tender
V/3 – V/5	10	Sheehan-McFarlane
V/5 – V/14	10	Armitage-McFarlane
V/15 – V/22	10	Coombs-Watt
V/22 – V/24	10	Coombs-Wilson Geo VI
W/0 - W/1	1	Coombs-Watt star
W/2 – W/6	1	Coombs-Wilson Geo. VI star
W/9 – W/71	1	Coombs-Watt
W/72 – W/75	1	Coombs-Wilson Geo. VI
W/76 – W/79	1	Coombs-Watt
W/80 – X/55	1	Coombs-Wilson Geo. VI

Two letters over numeral/s

£

AC/00 = AF/19	10/-	Coombs-Wilson Commonwealth Bank (CW)
AC/00 = AC/00	10/-	
AC/90 – AC/99	10/-	Coombs-Wilson CW star
AE/90 – AE/93	10/-	Coombs-Wilson CW star
AE/93 – AE/99	10/-	Coombs-Wilson Reserve Bank (Res.) star
AF/20 – AH/43	10/-	Coombs-Wilson Res.
AG/50 – AG/51	10/-	Coombs-Wilson Res. star
AH/50 – AH/60	10/-	Coombs-Wilson Res.
AH/62 – AH/65	10/-	Coombs-Wilson Res.
AH/69	10/-	25 <sup>th</sup> anniversary collection 999101 onwards
HA/00 – HF/65	1	Coombs-Wilson CW
HA/90 – HA/99	1	Coombs-Wilson CW star
HC/90 – HC/99	1	Coombs-Wilson CW star
HE/80 – HE/99	1	Coombs-Wilson Res. star
HE/90 – HE/92	1	Coombs-Wilson CW star
HF/65 – HK/65	1	Coombs-Wilson Res.
HK/68	1	25 <sup>th</sup> anniversary collection from 999101
		onwards
TA/00 – TB/41	5	Coombs-Wilson CW

TB/41 – TD/09	5	Coombs- Wilson Res.
TD/10	5	25 <sup>th</sup> anniversary collection from 999101
		onwards
TC/10 – TC/13	5	Coombs-Wilson Res. star
WA/00 - WA/28	10	Coombs-Wilson CW
WA/28 – WA/62	10	Coombs-Wilson Res. WA62 ended 061000.
WA/62	10	25 <sup>th</sup> anniversary collection from 089101
		onwards
2A	1000	Collins-Allen
2A	1000	Kell-Collins
PAPER DECIMAL		
	¢	
1 1 0 2	<u>⊅</u> 10	rad last and first partfalia
AA93	10	red, last and first portfolio
AA94 A A 05	20	red, last and first portfolio
AA95	50	red, last and first portiono
AA96	100	red, last and first portfolio.
А	20	Fraser-Cole gold or red numbers in uncut
		pairs
	-0	Gold 000001-000100, red 000101-002200
A	50	Fraser-Evans red or black numbers in uncut
		blocks of four
		Red 000001-000250, black 000251-001000
А	100	Fraser-Cole red or black numbers in uncut
		blocks of four
		Red 000001-000150, black 000151-000650
В	20	Fraser-Cole gold or red numbers in uncut
		pairs
		Gold 000001-000100, red 000101-002200
В	50	Fraser-Evans red or black numbers in uncut
		blocks of four
		Red 000001-000250, black 000251-001000
В	100	Red or black numbers in uncut blocks of four
		Red 000001-000150, black 000151-000650
С	20	Fraser-Cole gold or red numbers in uncut
		blocks of four
		Gold 000001-000100, red 000101-000900
С	50	Red or black numbers in uncut blocks of four
		Red 000001-000250, black 000251-001000
С	100	Red or black numbers in uncut blocks of four

		Red 000001-000150, black 000151-000650
D	20	Gold or red numbers in uncut blocks of four
		Gold 000001-000100, red 000101-000900
D	50	Red or black numbers in uncut blocks of four
		Red 000001-000250, black 000251-001000
D	100	Red or black numbers in uncut blocks of four
		Red 000001-000150, black 000151-000650
E	20	Gold or red numbers in uncut blocks of four
		Gold 000001-000100, red 000101-000900
E	50	Fraser-Evans red or black numbers in uncut
		pairs
		Red 000001-000250, black 000251-001500
E	100	Red or black numbers in uncut pairs
		Red 000001-000300, black 000301-001000
F	20	Gold or red numbers in uncut blocks of four
		Gold 000001-000100, red 000101-000900
F	50	Fraser-Evans red or black numbers in uncut
		pairs
		Red 000001-000250, black 000251-001500
F	100	Red or black numbers in uncut pairs
		Red 000001-000300, black 000301-001000
М	20	Red numbers 80 <sup>th</sup> anniversary first
		Commonwealth note folder
		M000001-000500 in folder with sleeve
		M000501-003000 Brisbane coin fair
		M003001-005500 mail order
HF	50	Florey portfolio red 000001-001000
HF	50	Florey portfolio black 001001-003500
A-B	20	1-100 uncut gold pairs
A-B	20	101-1500 uncut red pairs
A-D	50	Uncut blocks Fraser-Evans
A-D	100	Uncut red or black serials
C-F	20	1-100 uncut gold blocks
C-F	20	101-550 uncut red blocks
E-F	50	Uncut pairs Fraser-Evans
E-F	100	Uncut pairs Fraser-Cole red or black serials
AA93	10	Red number from Last and First portfolio
		000101-001000
AA94	50	Red number from Last and First portfolio
		000101-001000

AA95	20	Red number from Last and First portfolio
		000101-001000
AA96	100	Red number from Last and First portfolio
		000101-001000
AAA	1	000001-000100 NPA archives
AAA	1	101-1000 25 <sup>th</sup> anniversary portfolio
AAA-AGE	1	Coombs-Wilson
AAA-ADK	20	General circulation
AAA-ABQ	20	Fraser-Cole
AAA-ADK	20	Fraser-Evans
ABR-ADK	20	Fraser-Evans full sheets of 40 notes sale by
		tender 000001-000250 (250)
ADK	20	Hargrave centenary overprint red 000001-
		001000
ADK	20	Hargrave centenary overprint black 001001-
		005000
ADK	20	4000 Fraser-Evans overprinted Kingsford
		Smith centenary
AGE-AHY	1	Coombs-Randall
AHY-BBE	1	Phillips-Randall
AJS	20	Johnston-Stone signatures deleted for
		polymer trial
BBF-BLG	1	Phillips-Wheeler CW
BLG-BYB	1	Phillips-Wheeler Aust
BYC-CPJ	1	Knight-Wheeler
CPK-DGH	1	Knight-Stone
DBP	1	Knight-Wheeler test
DGH-DPS	1	Johnston-Stone
EAA-EYD	20	Johnston-Fraser
EVJ-EYD	20	Phillips-Fraser
EVJ-EYD	20	000002-10 uncut strip of 10 (36) sold by
		public tender
EYE-EZZ	20	Fraser-Higgins
EZP-EZY	20	Fraser-Higgins uncut horizontal pair
FAA	2	000001-000100 NPA archives
FAA	2	101-1000 25 <sup>th</sup> anniversary portfolio
FAA-FKD	2	Coombs-Wilson
FAA-FAB	50	Fraser-Evans
FAA-FBB	50	Fraser-Evans uncut sheets by tender 000001-
		000125 (125)
FKD-FPS	2	Coombs-Randall

FPT-GRF	2	Phillips-Randall
GRG-HBQ	2	Phillips-Wheeler CW
HBQ-HLP	2	Phillips-Wheeler Aust
HF	50	Florey 50 <sup>th</sup> anniversary
HLQ-HPT	2	Knight-Wheeler
HPU-HQV	2	as above OCRB
HQX-JDV	2	as above
JDX-KRP	2	Knight-Stone
KRQ-LQG	2	Johnston-Fraser
MAA-MHJ	10	Fraser-Higgins
MFQ-MGG	10	Fraser-Cole uncut blocks of four
MFQ-MRR	10	Fraser-Cole
MGH-MGR	10	Fraser-Higgins uncut pairs (20) 600106-10
MGH-MGR	10	Fraser-Cole uncut pairs 600002-601000
MGJ-MHJ	10	Fraser-Cole uncut blocks of four 600002-
		601000
MPX-MRR	10	Fraser-Cole full sheet 000001-000300 by
		tender (300)
NAA	5	000001-000100 NPA archives
NAA	5	101-1000 triple anniversary
NAA-NCS	5	Coombs-Randall
NCS-NGS	5	Phillips-Randall
NGT-NKG	5	Phillips-Wheeler CW
NKG-NQT	5	Phillips-Wheeler Aust
NQU-NVC	5	Knight-Wheeler gothic
NVD-NXE	5	as above OCR-B
NXF-NZZ	5	Knight-Stone
PAA-PDT	5	as above
PDU-PKE	5	Johnston-Stone
PKF-PYC	5	Johnston-Fraser
PXB-QBJ	5	as above, Gothic
QBK-QDE	5	as above
QDF-QJR	5	Fraser-Higgins
QDZ-QEG	5	Fraser-Higgins uncut vertical pairs 001001-
		003000
QDF-QFA	5	Fraser-Higgins uncut blocks four 001001-
		003000
QDF-QFA	5	Fraser-Higgins full sheets 000001-000500
		(500)
QDF-QFA	5	Fraser-Higgins half sheets 000501-001000
		(1000)

QGX-QPG	5	Fraser-Cole
RAA-RBU	20	Fraser-Higgins charity sheet 001092
RAA-RKB	20	Fraser-Higgins
RHG-RZZ	20	Fraser-Cole
RZV-RZZ	20	Fraser-Evans
SAA	10	000001-000100 NPA archives
SAA	10	101-1000 25 <sup>th</sup> anniversary portfolio
SAA-SDR	10	Coombs-Wilson
SDR-SFR	10	Coombs-Randall
SFR-STG	10	Phillips-Randall
STH-TBB	10	Phillips-Wheeler CW
TBC-TEL	10	Phillips-Wheeler Aust
TEN-TPC	10	Knight-Wheeler
TPD-TXT	10	Knight-Stone
TXU-UCC	10	Johnston-Stone
UCD-UYG	10	Johnston-Fraser
UYH-UZZ	10	Fraser-Higgins
VAA-VGX	20	Knight-Stone
VFV-VQK	20	Johnston-Stone
VQL-VZZ	20	Johnston-Fraser
WAA-WDD	50	Fraser-Higgins
WBT-WQH	50	Fraser-Cole
WNY-WZZ	50	Fraser-Evans
WYR-WZZ	50	Fraser-Evans full sheet (32) 000001-000125
		(125)
XAA	20	000001-000100 NPA archives
XAA	20	101-1000 25 <sup>th</sup> anniversary
XAA-XBP	20	Coombs-Wilson
XBQ-XBS	20	Coombs-Randall
XBS-XEU	20	Phillips-Randall
XEV-XGY	20	Phillips-Wheeler CW
XGY-XLH	20	Phillips-Wheeler Aust
XLJ-XUZ	20	Knight-Wheeler
XVA-XZZ	20	Knight-Stone
XXV	5	Charity auction sheet 000001-019501
XXV	5	Uncut 25 <sup>th</sup> anniversary Fraser-Cole
Blocks of four 012002-		
020000		
Vertical pairs 008002-		
012000		

Horizontal pairs 000002-

### 08000

YAA	50	Phillips-Wheeler Aust. 000001-100 NPA
VA A	50	101 1000 triple appivereary from 000101
IAA	50	
VAA VAIT	50	Dhilling Wheeler
IAA-IAU VAU VOZ	50	Phillips- wheeler
IAV-ICZ	50	Knight-Wheeler
YDZ-YHH	50	Knight-Stone
YHJ-YNS	50	Johnston-Stone
YNT-YXH	50	Johnston-Fraser
YXJ-YYU	50	Phillips-Fraser
YXJ-YYU	50	Phillips-Fraser uncut blocks of four (72)
		000002-000010
YXJ-YYU	50	000002-10 uncut blocks (72) sold by public
		tender
YYV-YZZ	50	Fraser-Higgins
ZAA-ZAF	1	Coombs-Wilson star
ZAA	100	Johnston-Stone 000001-100 NPA archives
ZAA	100	101-1000 triple anniversary
ZAA-ZCD	100	Johnston-Stone
ZAF-ZAH	1	Coombs-Randall star
ZAH-ZAQ	1	Phillips-Randall star omitting ZAI ZAO ZAM
ZBC-ZFU	100	Johnston-Fraser
ZEJ-ZJS	100	Fraser-Higgins
ZFA-ZFH	2	Coombs-Wilson star
ZFH-ZFK	2	Coombs-Randall star
ZFK-ZFQ	2	Phillips-Randall star
ZHG-ZLD	100	Fraser-Cole
ZJT-ZLD	100	Fraser-Cole uncut sheets of 32 (75) by tender
000001-000075		
ZNA-ZNC	5	Coombs-Randall star
ZNC-ZND	5	Phillips-Randall star
ZSA-ZSD	10	Coombs-Wilson star
ZSD-ZSE	10	Coombs-Randall star
ZSF-ZSJ	10	Phillips-Randall star omitting ZSI
ZXA	20	Phillips-Randall star
		1

## POLYMER

Normal serial number prefix runs only use letters A to M for the second prefix letter.

\$5 and \$100 test notes had the second prefix letter from N to Z.

Bicentenary \$10 and 1992-1994 \$5 notes had sequential numbering for prefixes.

From \$10 New Note Series in 1993 onwards, the prefix consists of two letters followed by the last two digits of the year printed e.g. AA93. Not all denominations are printed each year.

	<u>\$</u>	
AA00	10	dated Bicentenary Staff folders two notes
AA00	5	Fraser-Cole charity sheet 000000
AA00	5	Fraser-Cole purple serials FDI folder 000001-
		030000
AA00-AA23	10	dated Bicentenary folder single notes
Uncut vertical strips of 4	(1373),	sold by public tender
(1673), horizontal blocks	half sheets	
of 4	(1000) and	
	full sheets	
	of 24 (500)	
AA00-AB19	5	Fraser-Cole 1992
AA01	5	Federation, low numbers tendered
AA01	5	Federation 000001-000008 NPA archives
AA01	5	Federation 000009-000500 sold by public
		tender
AA01	5	Federation overprinted 001000-001050 by
		tender
AA01	5	Federation overprinted from 001001 in folder
AA01-DA01	5	Federation charity sheet 000000
AA01-JD01	5	Federation Macfarlane-Evans
AA02-DD02	10	Macfarlane-Henry charity sheet 000000
AA02-DD02	20	Macfarlane-Henry charity sheet 000000
AA02-GL02	10	Macfarlane-Henry
AA02-KM02	20	Macfarlane-Henry
AA03-DF03	10	Macfarlane-Henry
AA03-DA03	20	Macfarlane-Henry
AA03-DA03	50	Macfarlane-Henry charity sheet 000000
AA03-DA03	50	Macfarlane-Henry
AA04-DA04	50	Macfarlane-Henry charity sheet 000000
AA04-GB04	50	Macfarlane-Henry
AA05-DA05	20	Macfarlane-Henry charity sheet 000000
AA05-GB05	20	Macfarlane-Henry
AA05-JC05	50	Macfarlane-Henry

AA06-GL06	10	Macfarlane-Henry	
AA06-JC06	20	Macfarlane-Henry	
AA06-JC06	50	Macfarlane-Henry	
AA07-DA07	5	Stevens-Henry charity sheet 000000	
AA07-GL07	10	Stevens/Henry	
AA07-DA07	20	Stevens-Henry charity sheet 000000	
AA07-JC07	20	Stevens/Henry	
AA07-DA07	50	Stevens/Henry	
AA08-DA08	50	Stevens-Henry charity sheet 000000	
AA08-DF08	10	Stevens/Henry	
AA08-JC08	20	Stevens/Henry	
AA08-MD08	50	Stevens/Henry	
AA08-EL08	100	Stevens/Henry	
AA09-DA09	50	Stevens-Henry charity sheet 000000	
AA09-SF09	50	Stevens/Henry	
AA10-DA10	20	Stevens-Henry charity sheet 000000	
AA10-DA10	20	Stevens-Henry	
AA10-GB10	50	Stevens/Henry	
AA10-EL10	100	Stevens-Henry	
AA11-JC11	50	Stevens-Henry	
AA11-EL11	100	Stevens-Henry	
AA11-DA11	50	Stevens-Parkinson charity sheet 000000	
AA12-DA12	5	Stevens-Parkinson charity sheet 000000	
AA12-DF12	10	Stevens-Parkinson	
AA12-GB12	50	Stevens-Parkinson	
AA13	5	Dated folder 000125 onwards	
AA13-DF13	10	Stevens-Parkinson	
AA13-DA13	20	Stevens-Parkinson	
AA13-JC13	50	Stevens-Parkinson	
AA13-EL13	100	Stevens-Parkinson	
AA14-JC14	50	Stevens/Parkinson	
AA14-CF14	100	Stevens/Parkinson charity sheet 000000	
AA14-JK14	100	Stevens/Parkinson	
AA15-DF15	10	Stevens/Fraser charity sheet 000000	
AA15-DF15	10	Stevens/Fraser	
AA93	10	Fraser-Cole Last/First portfolio	
AA93-GL93	10	Fraser-Evans	
AA93-KE93	10	Fraser-Evans	
AA93	10	Fraser-Evans charity sheet 000000	
AA93	10	Red last/first portfolio 000101-001000	
AA93	10	Red, black, last/first folder 001001-010000	

AA93	10	Fraser-Evans black numbered folder 001001 010000		
AA94	5	Fraser-Evans A/D folder red 101-1000		
AA94	5	Fraser-Evans A/D folder black 1001-10000		
AA94	10	Fraser-Evans A/D folder red 101-1000		
AA94	10	Fraser-Evans A/D folder black 1001-10000		
AA94-DF94	10	Fraser-Evans		
AA94	20	Fraser-Evans charity sheet 000000		
AA94	20	Fraser-Evans Last/first portfolio 000101-		
		001000		
AA94	20	Fraser-Evans FDI folder 001001-006000		
AA94-PE94	20	Fraser-Evans		
AA95	5	Fraser-Evans		
AA95	5	Fraser-Evans A/D folder red 101-1000		
AA95	5	Fraser-Evans A/D folder black 1001-10000		
AA95	10	Fraser-Evans A/D folder red 101-1000		
AA95	10	Fraser-Evans A/D folder black 1001-10000		
AA95	20	Fraser-Evans A/D folder red 101-1000		
AA95	20	Fraser-Evans A/D folder black 1001-7000		
AA95	5	30 <sup>th</sup> anniversary folder 1000 red, 1500 black		
AA95-DA95	20	Fraser-Evans		
AA95	50	Fraser-Evans charity sheet 000000		
AA95	50	Fraser-Evans Last/first portfolio 000101-		
		001000		
AA95	50	Fraser-Evans FDI folder two notes 001001-		
		004500		
AA95	50	Fraser-Evans FDI folder one note 004501-		
		011500		
AA95-VG95	50	Fraser-Evans		
AA95	5	Fraser-Evans A/D folder red 101-1000		
AA95	5	Fraser-Evans A/D folder black 1001-10000		
AA95	10	Fraser-Evans A/D folder red 101-1000		
AA95	10	Fraser-Evans A/D folder black 1001-9000		
AA95	20	Fraser-Evans A/D folder red 101-1000		
AA95	20	Fraser-Evans A/D folder black 1001-7000		
AA96	100	Fraser-Evans charity sheet 000000		
AA96	100	Fraser-Cole Last/First portfolio 000101-		
		001000		
AA96	100	Fraser-Evans FDI folder two notes 001001- 003000		

AA96	100	Fraser-Evans FDI folder one note 00301- 00600		
AA96	5	Macfarlane-Evans A/D folder red 101-100		
AA96	5	Macfarlane-Evans A/D folder black 1001- 9000		
AA96	10	Macfarlane-Evans A/D folder red 101-100		
AA96	10	Macfarlane-Evans A/D folder black 1001- 9000		
AA96	20	Macfarlane-Evans A/D folder red 101-1000		
AA96	20	Macfarlane-Evans A/D folder black 1001- 7000		
AA96	50	Macfarlane-Evans A/D folder red 101-1000		
AA96	50	Macfarlane-Evans A/D folder black 1001- 5000		
AA96-DF96	10	Macfarlane-Evans		
AA96-DA96	20	Fraser-Evans		
AA96-DA96	50	Fraser-Evans		
AA96-JK96	100	Fraser-Evans		
AA97	5	Macfarlane-Evans A/D folder red 101-1000		
AA97	5	Macfarlane-Evans A/D folder black 1001- 8000		
AA97	10	Macfarlane-Evans A/D folder red 101-1000		
AA97	10	Macfarlane-Evans A/D folder black 1001- 8000		
AA97	20	Macfarlane-Evans A/D folder red 101-1000		
AA97	20	Macfarlane-Evans A/D folder black 1001- 7000		
AA97	50	Macfarlane-Evans A/D folder red 101-1000		
AA97	50	Macfarlane-Evans A/D folder black 1001- 6000		
AA97	100	Macfarlane-Evans A/D folder red 101-1000		
AA97	100	Macfarlane-Evans A/D folder black 1001- 5000		
AA97-DA97	5	Macfarlane-Evans charity sheet 000000		
AA97-DF97	10	Macfarlane-Evans		
	10	Macfarlane-Evans uncut pairs Red 010326-010375, blue 010376-010455		
AA97-DF97	10	Macfarlane-Evans uncut blocks of 4 Red 010001-010125, blue 010126-000325		
AA97-DA97	20	Macfarlane-Evans		
AA97-JC97	50	Macfarlane-Evans		

AA98	5	Macfarlane-Evans A/D folder red 101-1000		
AA98	5	Macfarlane-Evans A/D folder black 1001- 3000		
A A 98	10	Macfarlane-Evans A/D folder red 101-1000		
AA98	10	Macfarlane-Evans A/D folder black 1001-		
		3000		
AA98	20	Macfarlane-Evans A/D folder red 101-1000		
AA98	20	Macfarlane-Evans A/D folder black 1001-		
A A 98	50	Macfarlane-Evans A/D folder red 101-1000		
A A 98	50	Macfarlane-Evans A/D folder black 1001-		
11100	50	3000		
AA98	100	Macfarlane-Evans A/D folder red 101-1000		
AA98	100	Macfarlane-Evans A/D folder black 1001-		
		3000		
AA98-DA98	5	Macfarlane-Evans uncut sheets (40) by tender		
		(200)		
		005001-005200		
AA98-DF98	10	Macfarlane-Evans		
AA98	10	Currency note portrait Paterson 010001-		
		011500		
AA98-DA98	20	Macfarlane-Evans		
AA98-DA98	20	Macfarlane-Evans uncut pairs		
		red 010151-010170, black 010171-010210		
AA98-AJ98	20	Macfarlane-Evans uncut blocks of four		
		Red 100001-010050, black 010051-010150		
AA98-JC98	50	Macfarlane-Evans		
AA98-CF98	100	Macfarlane-Evans		
AA99	5	Macfarlane-Evans A/D folder red 101-1000		
AA99	5	Macfarlane-Evans A/D folder black 1001-		
		2200		
AA99	10	Macfarlane-Evans A/D folder red 101-1000		
AA99	10	Macfarlane-Evans A/D folder black 1001-		
		2200		
AA99	20	Macfarlane-Evans A/D folder red 101-1000		
AA99	20	Macfarlane-Evans A/D folder black 1001-		
Δ Δ 99	50	2200 Macfarlane-Evans A/D folder red 101-1000		
A A 99	50	Macfarlane-Evans A/D folder black 1001-		
	20	22000		
AA99	100	Macfarlane-Evans A/D folder red 101-1000		

AA99	100	Macfarlane-Evans A/D folder black 1001- 2200		
AA99-DF99	10	Macfarlane-Evans charity sheet 000000		
AA99-DF99	10	Macfarlane-Evans full sheet (45) by tender (150)		
A A 99_PF99	50	Macfarlane-Evans		
A A 99_D A 99	50	Macfarlane-Evans charity sheet 000000		
A A 99_D A 99	50	Macfarlane-Evans uncut pairs		
	50	Red 010061-010070 black 010071-010084		
A A 99-D A 99	50	Macfarlane-Evans uncut blocks of four		
	50	Red 010001-010025 black 010026-010060		
A A 99-CF99	100	Macfarlane-Evans uncut pairs		
	100	Red 010061-010073, brown/green 010074-		
		010090		
AA99-CF99	100	Macfarlane-Evans uncut blocks of 4		
		Red 010001-010025, brown/green 010026-		
		010060		
AA99-JK99	100	Macfarlane-Evans		
AB10-AB57	10	Bicentenary		
AB93	10	000001-DF93 purple dated folder		
AB94	20	FDI folder single note – AC etc.		
AB98	10	Currency note portrait Gilmore 010001-		
		011500		
AB98	10	10 <sup>th</sup> anniversary polymer red 000001-001000		
AB98	10	10 <sup>th</sup> anniversary polymer black 001001-		
		002500		
AN96-CS96	100	Fraser-Evans test		
AN97-DN97	5	Macfarlane-Evans test		
AP93	10	Eminent women portfolio red 000001-500		
AP93	10	Eminent women portfolio black 501		
		auctioned		
AP93	10	Eminent women portfolio black 000502-5000		
BA02-EA02	5	Macfarlane-Henry		
BA03-EA03	5	Macfarlane-Henry		
BA05-KC05	5	Macfarlane-Henry		
BA06-HB06	5	Macfarlane-Henry		
BA07-HB07	5	Stevens/Henry		
BA08-HB08	5	Stevens/Henry		
BA12-EA12	5	Stevens/Parkinson		
BA13-EA13	5	Stevens/Parkinson		

BA14-EA14	5	Stevens/Parkinson		
BA15-EA15	5	Stevens/Fraser		
BA93-EA93	5	Fraser-Evans		
BA95-KC95	5	Fraser-Evans		
BA96-CC96	5	Fraser-Evans uncut pairs		
		Red 000001-000125, black 000126-000400		
BA96-CC96	5	Fraser-Evans uncut pairs		
BA96-CC96	5	Fraser-Evans uncut blocks of 4		
		Red 000001-000125, black 000126-000400		
BA96-EA96	5	Fraser-Evans		
BA96-EA96	5	Macfarlane-Evans		
BA97-HB97	5	Macfarlane-Evans		
BA98-EA98	5	Macfarlane-Evans		
BA97-CC97	10	Macfarlane-Evans uncut block of four		
		010166-010325		
CI97-DF97	10	Macfarlane-Evans uncut blocks of four		
		Red 010001-010125		
CL96-EA96	5	Fraser-Evans blocks of four		
		Black 000126-000400		
CL97-EA97	10	Uncut block of four 010166-010325		
CE98-DA98	20	Macfarlane-Evans uncut blocks of four		
		Red 010001-010050, black 010051-010150		
EA93	5	30 <sup>th</sup> anniversary date overprinted 1000 red,		
		1500 black		
GD01-JD01	5	Federation Macfarlane-Evans uncut sheet of		
		40		
		(356) and low number singles by tender		

# Polymer out-of-sequence prefixes used for collector issues. \$

EA95 ES97	5 20	Red, last and first portfolio 500101-001000 Emergency services portfolio red 000001- 001000
ES97	20	Emergency services portfolio black 001001-003000
FE96	5	Signatures folder red 1-001000, black 1001- 002500
HK97	5	Hong Kong handover 5000 and 5000 mini- sheets of 8.
ME96	5	Signatures folder red 1-001000, black 1001-002500

MH99	20	Maritime Heritage portfolio red 000001- 001000
MH99	20	Maritime Heritage portfolio black 001001- 003000
0096	5-100	polymer note portfolios date overprinted
QE96	5	30 years portfolio red 000001-001000
QE96	5	30 years portfolio black 001001-003000
WM95	10	Waltzing Matilda portfolio red 000001- 001000
WM95	10	Waltzing Matilda portfolio blue 001001- 005000
ZZ97	5-100	annual complete collection 998500-999999
ZZ98	5-100	annual complete collection 998500-999999

# The Silver Ryals coinage of Mary, Queen of Scots

# David J Rampling

## Abstract

This paper's primary purpose is to record an extensive die study of the silver ryals coinage of Mary, Queen of Scots. In addition to descriptions of dies and a chronology of their use, it has been possible to offer a classification that encompasses all the silver ryals and their fractions, to comment on contemporary operations of the Scottish mint, estimate original die numbers and compare these and obverse/reverse die ratios to similarly sized English coins, estimate mint outputs and numbers of extant coins, and identify rarities and the percentages of coins countermarked as a revaluing device in 1578. Commentaries on counterfeits, the emblematic significance of the palm tree/tortoise reverse design, and the popular 'Crookston dollar' epithet, complete the paper.

## Keywords

[Crookston dollar] [dies] [Mary, Queen of Scots] [ryal] [Scottish coins] [Scottish mint]

## Introduction

The silver ryals coinage of Mary Queen of Scots, like the life under whose reign it was struck, has enigmatic accretions that make this series of coins a delight for numismatists and historians. The issue of face to face portrait ryals in 1565, inaugurated a series of large Scottish silver coins, albeit some fourteen years behind the initiative in England. The shrouded circumstances of their almost immediate withdrawal seem a prelude to the veiled mystery of the palm tree and tortoise reverse design of the subsequent regular issue, and the lore imputed to the series in ascribing a connection to Crookston Castle, in the popular 'Crookston dollar' epithet.

Knowledge of the dies used and their linkages has not significantly advanced for this coinage since Burns published his *magnum opus* in the nineteenth century,<sup>1</sup> although the published catalogues of the collections of the Hunterian and Ashmolean Museums, and National Museums Scotland, Edinburgh, have provided images, weights and brief annotations for coins held in these institutions.

It is perhaps surprising that the ryals coinage has hitherto escaped a detailed study, although this attempt to rectify the omission has proven sufficiently difficult to suggest an answer. All coins in the series are scarce, the one-third ryals being especially so,

<sup>1</sup> Burns 1887.

making the assemblage of a sufficiently large corpus dependent on images of coins not available to hand. Initially, high quality photographs were obtained of coins in the collections of the Society of Antiquaries of Scotland, the British Museum, The Ashmolean Museum and the Hunterian Museum, images that have subsequently been published in the *Sylloge of Coins of the British Isles* (*SCBI 35* and *58*) and/or the internet. Archived internet images from other public collections and major auction houses are recent additions to this data bank. The desirability of handsome coins to collectors has led to many specimens having lengthy provenances, so that images of a coin may be replicated in a number of catalogues recording through whose hands it has left or is passing at the time of publication. Identifying duplicate images, where provenances have not been stated by the cataloguers, has been an obvious necessity.

The main focus of this paper is a die study of the 'Type II Regular issues' ryals and their fractions, to which a brief consideration of the 'Type I Portraits issue' ryals provides a prelude, and the newly styled 'Type III Anomalous issues' ryals, an enigmatic conclusion. There are no Type I or Type III two-thirds or one-third ryals. A descriptive listing of all observed dies is presented in tabular form in Appendix I with keys to access images of each die. The few known counterfeits, copies and electrotypes are briefly discussed in Appendix II. The discourse involving the emblematic significance of the palm tree/ tortoise reverse design of Type II coins and the history of their popular association to Crookston Castle are reviewed in Appendices III and IV respectively.

## Typology and classification

## Type I - Portraits issue (ryal)

A once prevalent belief that this issue was not intended for circulation but was a celebratory marriage medal or pattern, may have drawn its inspiration from the nineteenth-century romantic ideas that have so coloured the histories of this queen.<sup>2</sup> The denomination's status as a coin has also been obscured by later copies of similar but cruder execution that are undoubtedly medallic and of uncertain intent.<sup>3</sup> No official documents sanctioning Type I ryals are known, and their status as coins is adduced from a letter of December 1565 from Thomas Randolphe, Mary's English ambassador, to Sir William Cecil in London. In this he states 'that the money was coined, when they first married, with both their faces, and his name first, and that this was called in, and

<sup>2</sup> Strickland 1853, IV, 104, provides a classical example: "Such then was Mary Stuart at two-and-twenty, when her heart had found, as she fondly believed, an object worthy of her affection; and 'love', to use the exquisite observation of St Pierre, the student of nature, 'was giving forth all its beauty in the presence of the beloved."

<sup>3</sup> There appears to be two varieties, one having the busts crowned [Cochran-Patrick 1884, Pl. I, Fig. 8] and the other uncrowned, as on the coin [Weir 2003, *First Section Illustrations*]. Mary's name precedes that of Henry's on both varieties. The medals are cast and tooled. Both varieties are extremely rare.

the alteration made in the new coinage, ' $^4$  of which he sent Cecil a specimen, describing its weight and value.  $^5$ 

The two known specimens are from identical dies. One is in the collections of the British Museum,<sup>6</sup> formerly in the Earl of Oxford collection, and the other in the National Museum of Scotland collection.<sup>7</sup> This latter coin is possibly the specimen reported to have been lost from the Sutherland collection.<sup>8</sup>

Obv. Busts of Henry and Mary face to face above date - 1565

Ŋ HENRICVS • & • MARIA • D : GRA • R • & • R • SCOTORVM

*Rev.* Crowned shield, medium thistles<sup>9</sup> each side

```
• QVOS • DEVS • COIVNXIT • HOMO • NON • SEPARET •
```

This reverse legend, signifying the sacredness of the conjugal union, was dispensed with for the regular issues and replaced with a legend having a tried and trusted precedent on the Scottish coinage. The EXVRGAT... legend first appeared on the gold unicorns and half-unicorns of James III and subsequently on the gold crowns of Mary dated 1561. The QVOS DEUS... legend was however reinstated as QVAE DEVS CONIVNXIT NEMO SEPARET on coins of James VI struck after the union of the crowns, as a convenient sign of the coming together of England and Scotland under his rule.

## *Type II – Regular issues (ryal, two-thirds ryal, one-third ryal)*

The Act of the Privy Council of 22<sup>nd</sup> December 1565<sup>10</sup> gave specific instructions as to the design of the new coins, and their minting appears to have commenced during that month. In addition to proclaiming the union of Mary and Henry Darnley, the new coinage served pragmatic ends. In legislating that the ryal should be current for thirty shillings, when its silver content was then twenty-two shillings, the Crown not only secured a profit of eight shillings per coined ounce, but halted the outflow of silver to

<sup>4</sup> Randolph to Cecil, Dec. 25, 1565, State Papers MS.

<sup>5</sup> Strickland 1853, IV, 236.

<sup>6</sup> Stewart 1967, 89, 178, Pl. XIII, 179. The BM specimen weighs 470.1 gr. *cf* 471.2 gr., the standard weight of the regular issue.

<sup>7</sup> Holmes, N. M. McQ., 2006, Pl. 44, 1165A. The NMS specimen weighs 467.8 gr.

<sup>8</sup> Cochran-Patrick 1884, 12.

<sup>9</sup> The terms 'large', 'medium' and 'small' are here applied to the thistles on either side of the escutcheon and to the thistle mintmarks on the reverse of the coins. The widths of the thistle's globular head beneath the brush of florets are: 'large' - 3.7 mm, 'medium' – 2.6 mm, and 'small' – 2.2 mm. The size of the thistles on the obverses are used to discriminate groups of ryal and two-thirds ryal dies. The one-third ryals all have 'small' thistles on both obverse and reverse. The 'large' thistle mintmarks appear to derive from the same punches as those used on obverse dies. The two-thirds and one-third ryal denominations have the same sized mintmark thistles as the thistles on their respective obverses, but there are subtle differences between those flanking the escutcheon and the thistle mintmarks.

<sup>10</sup> Cochran-Patrick 1876, I, 78

the Continent, where silver had hitherto been drawn on account of it being accorded a higher value. Officials were instructed to gather in the old silver money then circulating for melting into bullion for the new coinage. Whether the ryals coinage was entirely derived from earlier coin or whether the supply of silver was augmented from the influx of silver from the New World is unknown.

The design of all three denominations is the same. The escutcheon, a lion rampant within a double tressure, flanked on either side by a thistle - the reverse design of the portrait ryals - is made the obverse design of the new coins. The royal names and titles form the circumscribing legend, but Mary's name is placed before that of Henry's, unlike the arrangement on the Type I coins. The reverse displays a crowned palm tree with tortoise ascending the trunk and ornamented by a flowing scroll bearing the motto DAT GLORIA VIRES<sup>11</sup> across the trunk's upper reaches. The date numerals are equally divided on either side of the trunk. This whole central design is surrounded by the legend EXVRGAT DEVS ET DISSIPENTVR INIMICI EIVS<sup>12</sup> in contracted form.

Burns laid claim to noticing 'a large rose' on the back of the tortoise on the one-third ryal of 1565, by which sign he connected Darnley to the reptile and his royal English lineage.<sup>13</sup> Close scrutiny of well preserved specimens of this denomination and date suggest that the 'rose' is probably an illusion formed by the segmentation of the carapace.<sup>14</sup>

#### Classification

The system adopted for all three denominations is based on two features of the obverse design: the rendering of the legend, and the size of the thistles on either side of the escutcheon.<sup>15</sup>

<sup>11 &#</sup>x27;Glory gives strength'. Ovid, Tristia V, xii

<sup>12 &#</sup>x27;Let God arise and let His enemies be scattered' Psalm 68, 1

<sup>13</sup> Burns 1887, II, 339.

<sup>14</sup> Stewartby 2007, 225.

<sup>15</sup> See Note 9

#### RYAL

Fourth period – Mary and Henry

#### A + • MARIA • $\mathcal{C}$ • HENRIC<sup>9</sup> • DEI • GRA • R • $\mathcal{C}$ • R • SCOTOR $\overline{V}$ •

Medium thistles 21 dies

## $B + \bullet MARIA \bullet \mathscr{C} \bullet HENRIC^{9} \bullet DEI \bullet GRA \bullet R \bullet \mathscr{C} \bullet R \bullet SCOTOR\overline{V} \bullet$

Large thistles 25 dies

Fifth period - Second widowhood

C + • MARIA • DEI • GRA • SCOTORVM • REGINA •

Large thistles 15 dies

D + • MARIA • DEI • GRA • SCOTOR $\overline{V}$  • REGINA •

Large thistles 1 die

#### **TWO-THIRDS RYAL**

Fourth period – Mary and Henry

 $A + \bullet MARIA \bullet \mathscr{C} \bullet HENRIC^{9} \bullet DEI \bullet GRA \bullet R \bullet \mathscr{C} \bullet R \bullet SCOTORVM \bullet$ 

Medium thistles 2 dies

B + • MARIA •  $\mathcal{O}$  • HENRIC<sup>9</sup> • DEI • GRA • R •  $\mathcal{O}$  • R • SCOTOR $\overline{V}$  •

Medium thistles 13 dies

 $C + \bullet MARIA \bullet \mathscr{C} \bullet HENRIC^{9} \bullet DEI \bullet GRA \bullet R \bullet \mathscr{C} \bullet R \bullet SCOTOR\overline{V} \bullet$ 

Small thistles 8 dies Fifth period – Second widowhood

D + • MARIA • DEI • GRA • SCOTORVM • REGINA •

Small thistles 6 dies

E + • MARIA • DEI • GRA • SCOTORV • REGINA •

Small thistles 1 die

#### **ONE-THIRD RYAL**

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Fourth period – Mary and Henry
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The thistles on either side of the shield are all of the small variety.

A +• MARIA • ET • HENRIC<sup>9</sup> • DEI • GRA • R • ET • R • SCOTORVM • 10 dies

- B +• MARIA ET HENRIC<sup>9</sup> DEI GRA R ET R SCOTOR $\overline{V}$  1 die
- C +• MARIA ET HENRICVS DEI GRA R ET R SCOTORVM 3 dies

Fifth period – Second widowhood

D + • MARIA • DEI • GRA • SCOTORVM • REGINA •

1 die

The reverse dies for the ryals and two-thirds ryals have the legend:

 $\textcircled{W} \bullet \mathsf{EXVRGAT} \bullet \mathsf{DEVS} \bullet \mathscr{O} \bullet \mathsf{DISSIPENT}^{\mathtt{R}} \bullet \mathsf{INIMICI} \bullet \mathsf{EI}^9 \bullet$ 

The reverse dies of the one-third ryals usually render EIVS in full rather than in contracted form.

# Type III – Anomalous issues (ryal)

The classificatory system adopted is the same as that applied to the Type II ryals.

E • HENRIC<sup>9</sup>• & MARIA • DEI • GRA • R • & • R • SCOTORV •

Large thistles 1 die

F +• MARIA • DEI • GRA • SCOTORVM • REGINA •

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Large thistles. Broad escutcheon. (Marians issue) 2 dies
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The Group E and Group F ryals subsumed under Type III are a curious and enigmatic assortment. It must be acknowledged that in distinguishing them from counterfeit productions I am relying on rather inconclusive historical and numismatic evidence, but also the more reassuring opinion of Joan Murray with whom I co-authored a brief commentary.<sup>16</sup>

The Group E ryals are distinguished by having Henry's name preceding that of Mary's. Mrs Murray made the observation that the reverse die was shared with a genuine coin dated 1566, and on that basis we came to the conclusion that the single specimen<sup>17</sup> then available for study was 'probably genuine despite its low weight'. Nicholas Holmes is more guarded in his opinion, suggesting that the coin 'appears more likely to be an irregular striking'.<sup>18</sup>

Four further specimens<sup>19</sup> of Group E have now come to attention, making a total of five coins available for study. All five coins are from identical obverse and reverse dies. None are countermarked. Their respective weights are 30.07g (464.1gr), 29.71g (458.5gr), 28.65g (442.1gr), 27.81g (429.1gr) and 25.77g (397.7gr).

It is now possible to record that the obverse die also derives from an authentic die, albeit significantly altered to give precedence to Henry's name. These Group E coins derive from a B9 obverse die and a 65 reverse die. The B9 die has had the regnal names filled in and puncheons used to render the first part of the legend HENRIC<sup>9</sup> • & MARIA : Other minor alterations include the addition of a stop above the orb, the removal of the contraction mark above the V of SCOTORV, and the extension of the distal serif of this letter. The 65 die appears to be worn as the legend and design elements are somewhat

<sup>16</sup> Rampling and Murray 1989.

<sup>17</sup> Ex. R. C. Lockett collection, part lot 913, now in the NMS collection, H.C4103.

<sup>18</sup> Holmes 2006, commentary to coin 1189, H.C4103.

<sup>19</sup> Three retained by Spink and Son, London, and another offered in Auction 35 of Davissons Ltd., Cold Spring.

blunted. The tortoise has been applied to the die with a new puncheon giving it a more 'lizard-like' appearance.

The ingenuity and dedication of the operators that produced these coins is a marvel, and their identity and motivation a mystery. Did a faction sensitive to the circumstances surrounding Henry's death and with access to old dies contrive these fabrications? Perhaps they were propaganda pieces or merely commercial fantasy productions. In any event, their fabricator(s) had the skills and access to equipment suggestive of a familiarity with the workings of the mint.

Their survival as a group of at least five coins with matched dies is not dissimilar in size to the commonest groups of identical coins in the sample of Type II ryals. Whilst it is likely that the Group E coins would have been selectively hoarded by antiquarians and collectors, they were possibly produced in quantity. The absence of the revaluation countermark on any of the five specimens may be attributable to a number of causes, and is thus an unhelpful arbiter of whether these coins circulated to any extent; nevertheless, the spread of weights of the coins suggest that conformity to the standard of the ordinance, as would be required for the regular currency, was not a priority.

The Group F ryals are represented by two coins, a second example having recently come to light. The two coins are from different obverse and reverse dies, but share the characteristics observed on the original coin. They display the design of the Fifth period, Second widowhood ryals, but have larger date numerals, and the diameter of the circle of pellets enclosing the central design on both the obverse and reverse is greater than for the Regular issue ryals. Mrs Murray and I provisionally ascribed the one example then known to the group of coins said to have been struck by Mary's adherents in Edinburgh Castle in 1572, although it must be acknowledged that the lure to provide tangible evidence of the historical reference<sup>20</sup> may have influenced this decision. In any event these coins appear to be contemporary productions 'by a hand well practised in engraving the Scottish symbols'<sup>21</sup>.

## Die study of Type II coins

#### Aims

The study's primary aim was to identify, describe and classify the dies displayed by ryals, two-thirds ryals and one-third ryals in a comprehensive sample of this coinage drawn from institutional, private, retail and internet sources. The survey commenced in 1972 and was continued with varying degrees of application up to recent years when time became available to analyse the observations. The cut off point for a coin's inclusion in the study is 31<sup>st</sup> October 2015. The great majority of sources available since *circa* 

<sup>20</sup> Burns 1887, II, 352.

<sup>21</sup> Rampling and Murray 1989.

1970 have been studied. The availability of coins for personal examination, or quality images of coins in the many instances when this was not possible, was the necessary pre-requisite for inclusion in the sample. The accumulated group of coins comprised all examples of the three denominations I was able to access by these means. I believe it to be an unselected and therefore representative sample of extant coins, encompassing a significant portion of surviving specimens. Inevitably there are coins in private collections either unknown to me or lacking available images, but while these sources may be numerous, it seems unlikely that many contain more than one or two relevant coins. Unpublished institutional holdings have not been accessed, but it is safe to assume that the published collections of British museums hold the great majority of ryals and their fractions.

The frequency with which collectors' coins re-appear on the open market, and the infrequent appearance of previously unknown coins, gives some indication of the number of coins outside institutional collections. On these criteria it seems likely that the combined total of the three denominations in all repositories, both private and public, is less than a thousand coins. The relative rarity of individual coins according to denomination, date and dies used, can be appreciated from the tabulated data.

A second aim was to establish the pattern of die links for each denomination, and in so doing glean insights as to the way dies were used and their approximate chronology of service. Estimates could then be made of the total number of obverse and reverse dies originally employed for each denomination, using appropriate algebraic formulae. Individual dies or groups of dies are distinguished for commentary, either on the basis of their singular usage, as for example, the dies of the undated two-thirds ryals, or because they exhibit unique or rare features.

## Method

The following resources provided the material for the study:

- 1. National Museums Scotland, Edinburgh commissioned photographs; coins also illustrated in *SCBI 58*
- 2. Ashmolean Museum, Oxford and Hunterian Museum, Glasgow commissioned photographs; coins also illustrated in *SCBI 35* and at *http://www.fitzmuseum.cam. ac.uk/coins/emc/emc\_search.php*
- 3. British Museum commissioned photographs and personal examination; illustrations can also be accessed at *http://www.britishmuseum.org/research/collection\_online/collection\_object\_details.aspx?*
- 4. Spink & Son Ltd., internet image archive https://www.spink.com/archive.aspx

- 5. Dix, Noonan, Webb internet image archive *http://www.dnw.co.uk/auction-archive/ catalogue-archive/*
- 6. acsearch info, auction database http://www.acsearch.info/about.html
- 7. Printed sale and auction catalogue images, predominately of the period 1970-2015
- 8. Spink's Coins of Scotland Ireland and the Islands Third edition, 2015
- 9. Private collections most by personal examination
- 10. Miscellaneous sources, each of isolated or few coins photographs and/or personal examination

Care was taken to identify coins re-appearing on the market or present in more than one publication, so as not to gain falsely inflated numbers. Weights were noted where given or the coins weighed where this was possible.

It is perhaps worth emphasising that the sample, while representative of the original coinage, is not identical to it. This is an obvious handicap in a die study if the sample is small and possibly biased in its selection. The internet has been a boon in assembling a sufficiently large corpus where, as in this case, surviving coins are scarce. This spread of resources also gives credence to the claim that the sample is unbiased with regard to die representation, especially since hoards, which may produce quantities of die-duplicates, are not known to have contributed to surviving numbers. Many factors determine survival, including the predilections of collectors. The popularity of large coins may have been a factor in determining the apparent survival of more ryals than fractions, but there seems no reason for supposing that extant coins are unrepresentative in regard to their representation of dies. Collectors and museum curators do not appear to have chosen specimens with regard to dies, although coins struck both before and after Mary's second widowhood would have been sought for larger collections.

Description of study group (confined to Type II - Regular issues)

Ryal

by obverse:

Mary & Henry - 180 coins (91 cmk.) from 46 obverse dies Mary - 50 coins (26 cmk.) from 16 obverse dies

by reverse:

1565 - 65 coins (34 cmk.) from 6 dies 1566 - 101 coins (49 cmk.) from 9 dies 1567 - 64 coins (34 cmk.) from 10 dies

Two-thirds ryal

by obverse:

Mary & Henry - 88 coins (22 cmk.) from 23 obverse dies Mary - 32 coins (8 cmk.) from 7 obverse dies

by reverse:

1565 - 65 coins (16 cmk.) from 3 dies 1566 - 22 coins (6 cmk.) from 6 dies 1567 - 33 coins (8 cmk.) from 5 dies

One third ryal

by obverse:

Mary & Henry - 44 coins (12 cmk.) from 14 obverse dies Mary - 9 coins (4 cmk.) from 1 obverse die

by reverse:

1565 - 38 coins (10 cmk.) from 3 dies 1566 - 7 coins (2 cmk.) from 1 die 1567 - 8 coins (4 cmk.) from 4 dies

Total number of coins: 403 (230 ryals, 120 two-thirds ryals, 53 one-third ryals); of these, 111 are in museums.

Whilst it cannot be assumed that the ratio of extant coin numbers between denominations in this sample approximates that of the original mintage, it is noteworthy that ryals were encountered twice as frequently as two-third ryals, which in turn were twice as common as one-third ryals.

A glance at Table 1 might suggest a gradual decline in mint output over time, but the silver ryals coinage of James VI commenced in 1567 must be taken into account, and is evidence of a maintained production.

	1565	1566	1567		
Ryals	65	101	64	230	
2/3 Ryals	65	22	33	120	
1/3 Ryals	38	7	8	53	
	168	130	105	403	

 Table 1. Number of each denomination in the sample by date

Ryals with the revaluation countermark of 1578 marginally outnumbered unmarked coins in the sample. This was not the case with the fractions where countermarked examples were scarcer than unmarked coins. Ryals may have been treated preferentially in the re-valuing as the countermark assured a dividend of 6*s* 9*d* for each coin, whereas the fractions, while re-valued at the same rate of 2<sup>1</sup>/<sub>4</sub> percent, yielded a smaller gain per strike. A parallel discrepancy between the larger and smaller coins is found with the testoons and their halves, despite both denominations being re-valued at double the rate of the ryals and fractions. Thus countermarked half-testoons of any of Mary's issues are very rare. Collector preferences over the centuries may have also favoured unblemished coins, especially for denominations of smaller module, where the countermarking process obliterated a proportionally greater area of the obverse and reverse design.

It would appear from the distributions of the three denominations across time that the minting of the two-thirds and one-third ryals may have been given initial priority over the ryals. The evidence for this being so is more obvious for the two-thirds ryals in view of their pre-eminent numbers for 1565, despite their total sample numbers being approximately half that of the ryals. There is also the extraordinary circumstance of the group A dies of this denomination having the same full rendition of SCOTORVM as observed on the Type I Portrait ryals. It seems plausible that the new initiative of striking large silver coins at the Scottish mint was further trialled with the more modestly sized modules of the two-thirds ryals, and that the engravers, having followed a precedent, subsequently decided that contracted spellings were more in accord with the available space, not only for this denomination but also for the ryals. The one-third ryals, if predominantly an early production, appear to have passed by this refinement, as with one exception, they bear a cluttered obverse legend until, like the larger denominations, they assumed the shorter legend dictated by Mary's second widowhood.

## Die links and metrology

The ratio of obverse to reverse dies within the sample as a whole is approximately 2.3:1. This is probably an underestimate of the disproportion between the two groups of dies as the relatively small number of coins yielded many obverse dies, some being represented by single coins. It is thus likely that more obverse dies were in use than noted here. By way of contrast, the number of reverse dies observed in the sample is almost certainly a closer approximation to their original number.

The preponderance of obverse dies indicates that these were engraved on the trussel, thus sustaining the direct hammer blow, and consequently suffering more damage than the reverse die on the pile.<sup>22</sup> This arrangement of the striking implements, contrary to

<sup>22</sup> Discussions have arisen as to what determines the allocation of 'obverse' and 'reverse' to the sides of a coin. (See eg., *The E-Sylum*: Vol. 18, No. 22, May 31, 2015, Article 7). I have adhered to the conventional practice of regarding the side bearing the sovereign(s) name(s) and titles as the obverse.

the usual practice of having the obverse design on the pile, was probably determined by the complexity of the palm tree, scroll and tortoise reverse that required more detailed engraving than the escutcheoned obverse design. There may have been an occasional transposition in the allocation of the instrument bearing the obverse, as seems to have been the case with the one-third ryals dated 1567, where a single obverse die linked to four different reverse dies accounts for all eight coins of that date in the sample.

The die linkages suggest an approximate sequencing of the obverse dies, as individual or groups of dies appear loosely tied to one or more of the three dated reverses. It will be convenient to consider each of the three denominations separately before any conclusions are drawn.

## Ryal

The distribution of the four obverse die groups as linked to reverses of the three dates of issue is illustrated in Fig. 1. It can be seen that the Group A dies with the medium sized thistles on either side of the shield were pre-eminently responsible for the ryals of 1565, but still utilized in 1566. Those of Group B with the large thistles appear to have dominated in 1566 but extended over all three years, and Groups C and D with only Mary's name, confined to 1567.



Ryals: distribution by number, obverse die group and date

#### Figure 1

The linkages of individual dies and the numbers of each die combination are illustrated in Table 2.


Vertical axis: Obverse dies, type A, B, C and D Horizontal axis: Reverse dies grouped by date

**Table 2.** Ryal die link matrix showing the number of coins per die, the number of coins of each die combination, and the number of links per die.

While this chart suggests a certain sequencing of dies,<sup>23</sup> it relies on the unlikely assumption that individual dies had similar survival spans. Other factors affecting interpretation include the number of work stations, the number of dies embedded in the pile, the degree to which trussels and piles were interchangeable between work stations, and whether the dated dies were superseded by new reverses at the commencement of a new year. Such uncertainties render any temporal sequencing of the use of dies tenuous.

Bearing the forgoing caveats in mind, the obverse dies bearing the joint titles of Mary and Henry can be clustered into six groups according to their links to reverse dies as broadly categorized by date: three clusters for Group A dies, and three clusters for Group B dies. It is near certain that the Group A dies were of early manufacture as they share the same medium sized thistle puncheons used on the recalled portrait ryals.

Clusters a1, a2 and b1 are all linked to 1565 reverses, a1 exclusively so. It would appear that cluster a1 dies were operational from the outset of the coinage and abandoned by 1566. The clusters a2 and b1 may have either had exceptional survival times or come into use late in 1565. This latter scenario seems likely for the b1 cluster as only 19% in this cluster are linked to 1565 reverses, compared to over half of the a2 cluster. A combination of both factors is also possible. Cluster a3 obverses are linked exclusively to four 1566 reverses that are in turn each linked to one or more cluster a2 obverses. Two of these four reverse dies are linked to cluster b2 obverses, and are represented by only 6 of the 48 coins in the cluster, suggesting that cluster a3 dies were used early in 1566 being superseded by cluster b2 dies, also exclusive to that year. Clusters b3, c and type d dies are all linked to 1567 reverses; the cluster b3 dies may have taken precedence of use as they have the joint regnal titles. Thus a tentative sequencing of the obverse dies is a1, a2, b1, a3, b2, b3, c and d.

I have dispensed with a numerical format to illustrate the die links of the one-third ryals in view of the small number of coins involved. (Table 4)

<sup>23</sup> The listing of obverse dies in the far left hand columns of Tables 2 and 3 does not follow a numerical sequence. The procedure by which the clustering of dies was determined was based on the proportion of coins in the sample derived from dies linked to reverses of a particular year, an allocation performed subsequent to the identification of the individual obverse dies. This identification began by observing the numbers of fleur-de-lis around the shield. The dies initially described and thus accorded a low numerical identifier were those having the greatest number of fleur-de-lis, a factor that tended to place these dies early in the temporal sequence. This correlation of fleur-de-lis numbers with a temporal sequence is by no means exact, especially for the two-third and one third ryals. I have thus not endeavoured to assign numeral sequencing to the dies lest this give the impression of a greater precision than that afforded by the designated clusters. It also enables newly discovered obverse dies are positioned in a row across the tops of the charts, with the first numeral of a two numeral signifier indicating the last date numeral. The second numeral distinguishes the die from others of the same year, and does not indicate any particular sequence.

The sequencing of individual reverse dies within each of the dated groups is even less certain in view of their fewer number and longer survival times. It is enticing, for example, to assume that the two dies 63 and 64 preceded in use the other 1566 dies as they are exclusively linked to Group A obverses. It is, however, possible that the moneyer(s) working with a pile having either or both of these reverse dies affixed, was allocated only trussels bearing older obverse dies.

The Mary and Henry ryals dated 1567 provide a classic example of the engagement of older dies. Henry died in 1566 (old style) and yet the sample reveals that at least five obverse dies bearing his name are linked with five different reverse dies all dated 1567. The total of 14 specimens suggests that Burns' claim that 'these hybrid pieces are extremely rare'<sup>24</sup> is perhaps overstated.

It cannot be assumed that the sample displays all the dies that were originally used for this coinage. This is especially the case for the obverse dies where 14 dies are represented by single coins. There will inevitably be coins lost to posterity that displayed other dies.<sup>25</sup> The numbers of original reverse dies is more accurately reflected by the sample as all the identified dies are represented by a number of coins.

Various formulae have been devised for calculating original die numbers. All are based on the assumption that the sample is random, a criterion probably approximated in this widely garnered corpus. Applying appropriate formulae <sup>26</sup> gives an estimate of 74 original obverse dies, an increase of 12 over the observed number, and an estimate of 27 original reverse dies, an increase of two. Based on these estimates, it would appear that reverse dies had an average output two and three-quarter times that of obverse dies.<sup>27</sup>

<sup>24</sup> Burns 1887, II, 342.

<sup>25</sup> It is only possible to gain a very approximate indication of the numbers of coins struck. Burns (II, 337-338) quoting a contemporary source, gives the total weight of bullion coined into ryals and fractions between December 1565 and March 1572 as amounting to 562,209 ounces, this giving a currency value of £843,313/10/- (wrongly printed in Burns as £8433:13:10.). Making the very bold assumptions of a ratio of about 2:1 for the numbers minted under James compared with those under Mary, and equal numbers of each denomination, the figure obtained is 93,700 coins for each of the three denominations issued under Mary.

<sup>26</sup> For obverse dies: D=n × d/(1.069n – 0.843d) and for reverse dies: D=0.95n × d/(n-d), where D is the original number of dies, n is the number of coins in the sample and d is the number of observed dies. (See - Giles F. Carter 2007, 'New Methods for Calculating the Original Number of Dies in a Given Series', *Numismatic Circular*, CXV, No. 3, 151-153) Calculated values derived from equations are hedged about by many qualifications. These are discussed by Stewart Lyon 1989, 'Die Estimation: Some Experiments with Simulated Samples of a Coinage', *BNJ* 59, 1-12.

<sup>27</sup> While acknowledging the errors inherent in sample distribution, total mintage figures, and estimated number of original dies, the calculated mintage of 1266 coins per obverse die and 3470 coins per reverse die may be regarded as a 'best guess' of mean outputs.

## Two-thirds ryal

A similar pattern is exhibited by the two-third ryals (Fig. 2), the 1565 reverses being predominantly linked to obverses having 'medium' thistles either side of the escutcheon (Groups A and B) suggesting their precedence in use over the Group C dies ('small' thistles), although this latter group of dies is linked to reverse dies of all three dates. The reverse dies of 1566 link with Groups B, C and E, and those of 1567 with Groups C, D and E.



# Two-thirds ryals: distribution by number, obverse die group and date

#### Figure 2

Individual die links are illustrated in Table 3. The caveats applied to Table 2 also apply to the ryal fractions.

		1565	;			15	66					1562	7				
	51	52	53	61	62	63	64	65	66	71	72	73	74	75	n coins	n dies	
A2 A1	2		1												3	2 1	a
B1 B7 B5 B9 B4 B12 B13 B6 B2	3 1 1 1 2 2	3 3 1 7	1 6 3 1	4	1										7 7 4 3 1 1 1 1 20 7	3 2 2 1 1 1 1 1 5 3	b1
B2 B3 B8	1 3	4 4 1	1		1 2 1										86	44	b2
B11 B10						1		2							1	1	b3
C1 C2 C3	2 2 1														2 2 1	1 1 1	c1
C4 C5 C8							3 2 1		1						3 2 2	1 1 2	c2
C7 C6				1			1			1 1					22	2 2	c3
D3 D4 D6 D1 D2 D5										10 3 1	3 4	1	5	1	13 5 5 4 1 1	2 2 1 2 1 1	d
E1							1						2		3	2	e
n coins n dies	22 13	23 7	20 8	5	5	1	8	2	1	16 5	7	2	7	1	120		

**Table 3**. Two-thirds ryal die link matrix showing the number of coins per die, the number of coins of each die combination and the number of links per die. Vertical axis: Obverse dies, Groups A, B, C, D, and E. Horizontal axis: Reverse dies grouped by date.

#### David J Rampling

The four coins subsumed under cluster a, the undated two-thirds ryals, were perhaps the first of the Regular issue to be struck. They are derived from two obverse and two reverse dies. Their obverse dies are distinguished in having the complete rendering of SCOTORVM rather than the usual contracted spelling SCOTORV observable on all dated coins of Mary and Henry (Groups B and C). Unlike the two undated and subsequently re-used reverse dies with date added, the obverse dies do not appear to have had further use. There are, for example, no Group B dies that accord in all respects with dies A1 or A2 but with the removal of the terminal M. There is also no evidence that these A dies were derived from B dies that had had an M appended to SCOTORV. Being thus uniquely linked to undated dies, they may have served to easily identify the resulting aberrant or possibly trial coins. Some examples obviously escaped recall, if indeed recall was the intention, as witnessed by two of the four coins having the revaluation countermark of 1578.

The b1 and c1 clusters of obverse dies are exclusively linked to 1565 reverses; the b2 cluster were used for both 1565 and 1566 reverses, although the fewer number of surviving coins of the latter date suggests that their survival into 1566 may have been short-lived. One obverse die of this group (B6) appears to have been exceptionally productive, responsible for 20 coins, the mean being four per obverse die for this sample of 120 coins. The b3 and c2 clusters only appear to have been in use in 1566, although the small number of surviving representative coins renders this assessment tentative in distinguishing them from the even fewer coins representing clusters c3 and e, that are linked to both 1566 and 1567 reverses. The Group D dies are confined to 1567 and are linked to all five reverse dies of that year.

Calculations of original die numbers using the same formulae as for the ryals, gives estimates of 35 obverse dies (30 observed in the sample) and 15 reverse dies (14 observed in the sample), suggesting that on average, the reverse dies had an output two and a third times that of the obverse dies.

## One-third ryal

The small number of one-third ryals in the sample renders any generalisation about this denomination speculative. The ten identified Group A obverses and the single Group B obverse are all linked to 1565 reverses, there being only one of the A group (A8) also linked to a 1566 reverse. The coins struck from Group C dies are equally spread across 1565 and 1566 (3 coins of each date), suggesting a later origin, and the single die of Group D is responsible for all coins dated 1567 and a single example dated 1566. (Fig. 3)



# One-third ryals: distribution by number, obverse die group and date

#### Figure 3

Table 4 illustrates the apparent use of a single obverse die (D1) for all one-third ryals struck from the four 1567 reverse dies (71, 72, 73, 74), and raises the likelihood that these coins were struck with the reverse die on the trussel and the obverse die on the pile. Alternative hypotheses would include the single obverse die being used at four or more work stations or at stations with more than one reverse die embedded in the pile.

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	C1	C2	C3	D1
51	×	×	×		×			×				×			
52		×	×	×	×										
53		×	×		×	×	×	×	×	×	×		×		
61								×				×		×	×
71															×
72															×
73															×
74															×

Table 4. One-third ryal die link matrix showing the pattern of linkages for each die

The calculations of original die numbers yield 18 obverse dies (15 observed) and 9 reverse dies (8 observed), giving an average output for the reverse dies as twice that of the obverse dies.

## Discussion

The progressive decline in the ratios of calculated original obverse to reverse die numbers is noteworthy, being 2¾ for ryals, 2⅓ for two-third ryals, and 2 for the one-third ryals, although the figure for the smallest denomination is compromised by the small number of coins and the likely reversal of obverse and reverse dies on the coining implements that struck the 1567 dated coins. Nevertheless, the observed progression, at least for the ryals and two-third ryals, is in keeping with the expectations of the relative vulnerability of dies on the trussel.<sup>28</sup> Trussels were more liable to damage in striking the larger coins as these required to be struck with a heavier hammer which tended to mutilate the die shanks.<sup>29</sup>

Individual obverse/reverse die ratios are influenced by the yearly dating of reverse dies and the alteration of the regnal titles on the obverse subsequent to Mary's second widowhood. It is therefore likely that some dies were abandoned while they were still otherwise serviceable. The effect of these variables on ratio values does not necessarily invalidate the relative progression noted above as the minting of all denominations was subject to the same constraints.

There is a subtle decline in die quality in all three denominations after 1565 as witnessed by surviving coins. Features in the design of both obverse and reverse dies become simpler and/or cruder. The ryals of 1565 have within their number nearly all coins struck from Group A dies exhibiting the full compliment of 16 fleur-de-lis on the outer border of the shield <sup>30</sup> (Plate 1, A3), a feature of the shield on the Type I portrait ryals, suggesting that these singularly embellished Group A dies were amongst the first to be made. The coins featuring this neat proliferation of ornament appear with the exception of two reverse dies<sup>31</sup> to be linked to all of the four reverse dies<sup>32</sup> having an elaborately edged scroll about the palm's trunk (Plate 1, 52) as opposed to the more usual straighter flat scroll. Two of the 'edged scroll dies'<sup>33</sup> also have a feint fine circular guide line surrounding the central motif, indicating care in the symetrical execution of the dies. Guide lines also occur on two obverse dies<sup>34</sup> having the sixteen fleur-de-lis on

- 32 52, 53, 54 and 56.
- 33 53 and 54.
- 34 A3 and A4.

<sup>28</sup> Reference to Tables 2 and 3 will show that the greatest numbers of ryals in the sample struck from a single obverse die is 10, and 20 for a single reverse die, *cf* 20 and 23 coins respectively for the two-thirds ryals.

<sup>29</sup> Cooper 1988, 39.

<sup>30</sup> Only one of the 31 coins in this group (A1, A2, A3, A4, A5, A6 and A7) is linked to a 1566 reverse.

<sup>31 51</sup> and 64.

the outer border of the shield. All these features suggest a level of quality control for the early issues.

Weights are available for two-thirds of the total sample of 403 coins. The suggested decline in mint standards might be expected to be reflected in less consistent weights of ryals minted after 1565.<sup>35</sup> The standard deviations from each of the mean weights of early and later groups of coins provide a comparative measure of uniformity. The standard deviations in the samples of ryals of known weight dated 1566 and 1567 are each significantly greater than those of 1565, although this measure of corroborative evidence must be tempered by the inevitable inconsistencies imposed by the wear and tear of circulated coins.<sup>36</sup>

Other evidence of progression to a somewhat *laissez faire* approach to the coining is also apparent with the later fractions. Whilst mistakes in legends, omitted design features, and evidence of minor die damage occur in all three denominations and across all three years, these are particularly conspicuous for the two-thirds ryal reverse dies of 1566 and 1567. Superimposed letters are adjustments on dies 64 and 66, and the small superscribed 'A' in EXVRGAT appears to be a late correction to die 73. A most arresting error is exhibited on the reverse of one-third ryals of 1566, where the tortoise is rendered incuse on the only die of that date.<sup>37</sup>

The two-thirds and one-third fractions in the sample did not show any significant differences in mean weights across the three years of issue,<sup>38</sup> nor was there any greater variance in the weights of the two-third ryals dated 1566 and 1567 compared to those of 1565. The small number of one-third ryals show greater variance in weight for coins dated 1565 than those of later date.<sup>39</sup> These results may appear to cast doubt on the value of weight variability as evidence of deteriorating mint standards, but the small numbers involved and the likely transposition of trussel and pile for the one-third ryals of 1567 probably invalidate a meaningful comparison. It is also the expectation that the coins of

<sup>35</sup> This measure is contingent upon there being approximately equal wear exhibited by the coins of each of the three years of issue for which weights are available, a condition met for ryals in the sample. In the few instances where two reported weights for a single coin were available, the mean weight was taken to be the coin's true weight; if the weights differed by more than 1 grain, the coin was eliminated from the calculation.

<sup>36</sup> Comparison of standard deviations (F-test): 1566 *cf*. 1565, F = 3.74,  $df_n = 61 df_d = 38$ , p = <0.001; 1567 *cf*. 1565, F = 3.11,  $df_n = 38 df_d = 38$ , p = <0.001; 1566 *cf*. 1567, F = 1.20,  $df_n = 61 df_d = 38$ , p > 0.05. There are no statistically significant differences between the mean weights of the year groupings: 1565 = 466.7 gr., 1566 = 465.0 gr. and 1567 = 465.6 gr.

<sup>37</sup> This die is also the only reverse die of the three denominations to have a cross instead of a thistle as the mintmark preceding the legend.

<sup>38</sup> Mean weight for two-thirds ryals (all dates) = 311.4 gr. Mean weight for one-third ryals (all dates) = 153.4 gr.

<sup>39</sup> Comparison of standard deviations (F-test): 1565 cf. (1566 + 1567), F = 4.65,  $df_p = 29$ ,  $df_d = 13$ , p = <0.001

1565 having been in circulation one or two years longer than those of 1566 and 1567 <sup>40</sup> might display the vagueries of wear and tear to a greater extent than those of the later years, rendering the difference in variance between early and later ryal weights even more remarkable.

The Privy Council, the overseers of contemporary operations at the Mint, had much to occupy them during the period 1566-7. The murders of Rizzio and Darnley, the birth of Prince James, and the arrangements for his subsequent baptism, must have drawn attention away from more pedestrian concerns. Perhaps the turmoil allowed unaccustomed license at the Mint, enabling not only a general decline in standards, but also the production of the anomalous ryals of 1566 with Henry's name preceding that of Mary. It is not hard to imagine such laxity enabling the Marians or others to continue minting on their own initiative and with their own dies.

## **Comparable studies**

There have been few die studies of English hammered crown sized silver coins that might have similar die histories to the ryals, or indeed of denominations comparable to the Scottish fractions. The publications of F. R. Cooper on the crowns of James I <sup>41</sup> and Charles I <sup>42</sup> are noteworthy, as is a less extensive but no less valuable die study of the crowns of Elizabeth I by D. A. Barr.<sup>43</sup> The approaches of these authors differ in some respects to the study now reported so that comparisons do not lend themselves to easy interpretation. All three English issues are of comparable rarity to Mary's ryals, but two of the three studies relied on substantially fewer coins for die identification and links. Both Cooper and Barr drew on a more circumscribed source of material for their studies than those used for the Scottish series. The scope of material now available to the researcher by way of the internet, provides the opportunity of gathering a large corpus of high quality images, which because of their diversity, avoids any homogeneity that may hamper the accuracy of a more select sample. Restrictions on publishing the location of every coin are nevertheless necessary, as many in the sample are drawn from private collections.<sup>44</sup>

<sup>40</sup> An Act of Parliament of 24<sup>th</sup> October 1581 recalled the current silver coin for re-minting into the 40, 30, 20 and 10 shilling pieces of James VI; the time for receiving these pieces at the mint at Edinburgh expired on 1<sup>st</sup> July, 1582. It seems unlikely that proscribed coins that escaped being melted down would have had any circulation after this time (Burns, II, 366). The proportion of countermarked ryals is virtually the same for all three dates (1565 – 52%, 1566 – 49%, 1567 – 53%), giving no indication of any early withdrawal of the 1565 coins from circulation.

<sup>41</sup> Cooper, F. R., 1970, "The English Silver Crowns of James I, a study of the dies and die combinations", *BNJ* XXXIX, 145-157

<sup>42</sup> Cooper, F. R., 1968, "Silver Crowns of the Tower Mint of Charles I, a study of dies and die combinations", *BNJ* XXXVII, 110-37

<sup>43</sup> Barr, D. A., 1998, "Further Observations on the Dies of the Silver Crowns of Elizabeth I", NCirc CVI, 2, 56-59

<sup>44</sup> I welcome enquiries from anyone wishing to identify the provenance and/or context of any ryal or ryal fraction that is within or without the framework now published – email: rampling@ozemail.com.au

Cooper and Barr give significance to the number of observed 'varieties', by which is meant the total number of unique obverse/reverse die combinations exhibited by the sample. I confess to hesitation in according this measure significance, as it may suggest unique design elements rather than differing combinations of dies. Nevertheless, it is a simple matter to deduce from Table 2 that the sample of 230 ryals yielded 110 varieties. This compares with 20 varieties for the Elizabeth I crowns based on an unspecified sample size, 30 varieties for James I crowns based on a sample of 25 coins, and 75 varieties<sup>45</sup> for the Charles I crowns of the Tower mint based on a sample of 239 coins. The greater number of varieties in the present study hardly reflects any meaningful difference from the numbers reported for the English coins, as the Edinburgh moneyers had to contend not only with dated reverse dies, but with the changed obverse design subsequent to Mary's second widowhood. These variables would have occasioned the abandonment of old dies for new, resulting in more varieties and more dies than those employed for the relatively homogenous issues of the English monarchs.

The English moneyers appear to have adopted the conventional practice of having the reverse die on the trussel and the obverse die on the pile. In all three coinages the numbers of reverse dies in the samples reported are significantly greater than the numbers of obverse dies, suggesting that the reverse dies suffered under the direct blows of the hammer. This arrangement was clearly expedient considering the very elaborate obverse designs of all three English issues.

It is worth noting that in England a decline in the standard of silver coin production, especially as exemplified by the crowns of James I, has been attributed to a relaxation of the threat of mechanization trialled at the Tower Mint by Eloye Mestrelle in the years 1561-1572.<sup>46</sup> Whether this was a factor influencing the earlier decline of minting standards as seemingly occurred with the later ryals of Mary in Scotland, can only be conjectured.

Students of the English coinage have had the advantage of referring to the dated Trials of the Pyx to determine the sequence of dies based on mintmark usage, a boon for which there is no available Scottish equivalent; hence the less direct and inferential methods of the present study.

<sup>45</sup> Four additional varieties are noted as having been reported, but not verified by Cooper.46 Barr 1998.

## Conclusions

- 1. Assuming the sample is representative of extant coins, ryals are almost twice as prevalent as two thirds ryals, which are in turn twice as frequently encountered as one-third ryals. These ratios are probably not indicative of the comparitive numbers struck, as the larger coins tend to be hoarded or collected in preference to smaller coins.
- 2. Given the frequency with which individual coins have reappeared on the market, the total number of extant coins of all three denominations is unlikely to exceed 1000, with probably generous approximations being: ryals 570, two-thirds ryals 300 and one-third ryals 130.
- 3. Countermarked ryals are encountered as frequently as unmarked examples, but countermaked fractions are rarer than unmarked examples (25% of two-thirds ryals, and 30% of one-third ryals).
- 4. Some coins are exceedingly rare:
  - Denomination/date combinations
    - one-third ryal 1566, seven coins (five of these in museums)<sup>47</sup>
    - one-third ryal 1567, eight coins (five of these in museums)
  - Atypical legends
    - one-third ryal, 4<sup>th</sup> period, Group B, contracted obv. SCOTORV, one coin
    - undated two-thirds ryal, 4<sup>th</sup> period, Group A, full obv. SCOTORVM, four coins (two of these in museums)
    - ryal, 5<sup>th</sup> period, Group D, contracted obv. SCOTORV, three coins (two of these in museums)
- 5. The estimated number of original obverse and reverse dies exceeds the number evidenced by extant coins. Of the 62 ryal obverse dies exhibited in the sample, 14 are singletons; of 30 two-thirds ryal obverse dies, 8 are singletons; and of the 15 one-third obverse dies, 7 are singletons. Of the 25 ryal reverse dies, none are singletons; of the 14 two-thirds ryal reverse dies, 3 are singletons; and of the 8 one-third ryal reverse dies, 3 are singletons.
- 6. It is very likely that the output of individual dies varied considerably, as witnessed by the quantities of surviving coins struck from individual dies, and the large number of die links achieved by some dies compared with the very restricted linkages achieved by others; eg within the two-thirds ryal sample, die 51 in undated and then dated

<sup>47</sup> Wingate 1868, 107, claimed never to have seen one-third ryals of 1566 or 1567.

formats, is linked to 13 obverse dies, *cf*. dies 63, 65 and 66 that are each linked to only one obverse die.

7. The number of each denomination in the sample for each year suggests that the smaller denominations may have been given precedence over the issue of ryals, either in output, sequencing or both. The distribution of the denominations across the three years of issue and the proportion each year's representation makes to the total for the denomination and for the year is displayed in Table 5. Percentages are shown in small numerals.

	ryals	% denom.		⅔ ryals	% denom.		⅓ ryals	% denom.		
			% yr.			% yr.			% yr.	total %
1565	65	28		65	54		38	72	1	68
			39			39			22	100
1566	101	44		22	18		7	13	1	30
			78			17			5	100
1567	64	28		33	28		8	15	1	05
			61			31			8	100
total %		100			100			100		
	230			120			53		4	.03

Table 5

- 8. The undated two-third ryals may have been trial pieces, and their unique full obverse legend would have facilitated ready identification.
- 9. The 'quality control' at the Mint seems to have been less stringent after 1565 as evidenced by less care in the execution of dies, and a greater variance in ryal weights dated 1566 and 1567.

## Appendix I: Descriptive tables of individual dies

Individual obverse dies within each of the main groups (A, B, C etc.) are distinguished by one or more of the following features:

- a. The number of fleur-de-lis on the outer and inner borders of the shield
- b. The positions where a transverse projection along the upper border of the shield meets the legend
- c. The position and form of contractions
- d. Errors in the legend and other unusual design elements

#### David J Rampling

Individual reverse dies are distinguished by date and one or more of the following features:

- a. The size of the thistle mintmark (ryals only) small, medium, large
- b. The positions where a transverse projection touching the upper points of the lateral extremities of the scroll meets the legend
- c. The position and form of contractions
- d. Errors in the legend and other unusual design elements



**Figure 4.** Distinguishing features of dies - block arrows point to the determinants of the major die groups, and the line arrows and transverse projection lines are used to differentiate individual dies.

The following conventions have been adopted:

- (i) The obverse die group designation (A, B, C etc.) prefixes the die number.
- (ii) A forward slash separates the outer from the inner number of fleur-de-lis on the perimeter of the shield.
- (iii) The crossing points of projection and legend are indicated as right side of coin followed by left as observed.

The following abbreviations designate the printed reference or internet archive that hosts a particular image:

AMR – AMR Coins Ltd., Leeds, dealer inventory; *http://www.amrcoins.com/* Baldwin – A. H. Baldwin and Son Ltd., London, auction; *http://www.baldwin.co.uk/* 

- Baldwin list A. H. Baldwin and Son Ltd., London, bi-annual fixed price list; http://www.baldwin.co.uk/
- BM British Museum, London; *http://www.britishmuseum.org/research/collection\_online/collection\_object\_details.aspx?*
- Bonhams Bonhams 1793 Ltd., auction; https://www.bonhams.com/departments/CAT-CNS/
- CNG Coin Shop Classical Numismatic Group Inc., Lancaster, fixed price internet list; https://cngcoins.com/Coins\_sold.aspx
- CNG Classical Numismatic Group Inc., Lancaster, auction; *https://cngcoins.com/ Coins\_sold.aspx*
- Coinage of E. Coinage of England Ltd., London, dealer inventory; *http://www.coinageofengland.co.uk/*
- DNW Dix Noonan Webb, London, auction; *http://www.dnw.co.uk/auction-archive/ catalogue-archive/*
- Glendining Glendining & Co., London, auction
- Glendining/Spink Glendining & Co in conjunction with Spink & Son Ltd., auction
- Heritage Heritage Auctions, Dallas; *http://coins.ha.com/*
- Kittredge Kittredge Numismatic Foundation; http://www.kittredgecollection.org/

London - London Coins Ltd., Bracknell, auction; http://www.londoncoins.co.uk/

- NCirc. Spink Numismatic Circular
- Noble Noble Numismatics Pty Ltd., Sydney, auction; *https://www.noble.com.au/ auctions/archive*
- Numismatik Numismatik Lanz München, auction; http://www.numislanz.com/
- Omnicoin online numismatic community; http://www.omnicoin.com/
- P Private collection
- PF list Patrick Finn fixed price list
- SCBI 35 Sylloge of Coins of the British Isles 35 Ashmolean Museum, Oxford and Hunterian Museum, Glasgow; http://www.fitzmuseum.cam.ac.uk/coins/emc/emc\_search.php
- SCBI 58 Sylloge of Coins of the British Isles 58 National Museums of Scotland, Edinburgh; http://www.fitzmuseum.cam.ac.uk/coins/emc/emc\_search.php
- SCMB Seaby's Coin and Medal Bulletin
- Sotheby Sotheby & Co., London, auction; http://www.sothebys.com/en/departments/ coins.html
- Spink Spink & Son Ltd., London, auction; https://www.spink.com/archive.aspx
- Spink/Bowers/Ruddy Spink & Son Ltd., London, and Bowers and Ruddy Galleries, Inc., Los Angeles., auction
- *Spink 2015 Coins of Scotland, Ireland and the Islands, and Anglo-Gallic,* 3rd ed., London St James St James's Auctions, London; *http://stjauctions.com/auction-archive/*
- Studio Studio Coins, Stephen and Janet Mitchell, fixed price list; http://www. studiocoins.net/

- Triton Classical Numismatic Group Inc., Lancaster, auction; *https://cngcoins.com/ Coins\_sold.aspx*
- World of C. numismatic posting board; http://www.worldofcoins.eu/forum/index. php?PHPSESSID=3168bc503bb6c6674f08a6439b8884d1&

Other abbreviations:

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bt. – bought from; cf – compared with; coll<sup>n.</sup> – collection, & – ampersand; fdl – fleur-
de-lis; l. – left; prox. – proximal <sup>48</sup>; pt. – part of; r. – right; ? – uncertain or unknown;
+ – cross surmounting crown
```

I have provided multiple provenances for some of the coins used to illustrate individual dies, not only as an additional source of images, but as evidence of the many published guises in which coins constituting the sample have appeared over the years. This multiplicity of appearances, especially for coins not residing in institutional collections, is characteristic of the corpus as a whole, and distinguishes it from research samples derived from hoard material. This fact has necessitated vigilant comparisons of images as many coins come on the market without a history.

Distinguishing features of the dies are set out in the following tables. I have endeavoured to provide a printed and internet image(s) for each die. Some web addresses display both obverse and reverse dies of the selected coin - the reference is, of course, to just one of these. All web addresses are operative at the time of writing, but should an address fail to yield an appropriate image, a search of the host site using the identifiers provided should meet with success. In the few instances where an internet image is unavailable, I have listed a second printed image, or where no published image is available, an illustration has been sourced for the Plates.

Semi-colons within a bracketed sequence separate different references to the same coin. A semi-colon or 'and' in open text separating two references indicates that the images are of different coins; where the web address follows directly from a reference, the internet image is of the referenced coin.

Individual references for sales are sequenced as auction or list number, date,<sup>49</sup> lot or reference number, followed by the provenance if known. Museum collections refer to printed or internet references. Occasional inconsistencies in these listing arrangements arise from singular sources or unknown information.

<sup>48</sup> The anatomical terms 'proximal' and 'distal' succinctly describe those parts of the legend traversed by the projection lines. 'Proximal' indicates the near side or first part of a letter or symbol encountered as the legend is read clockwise, and 'distal', the far extremity of a letter or symbol.

<sup>49</sup> Dates are given as day/month/year, the year being shortened to its last two numerals, as the vast majority of sources refer to the past half-century; years outside this time-frame are given in full.

## Type I – Portraits issue

## Ryals

## Obverse die

Die	Thistle	Design elements	Images
unique	medium	facing uncrowned busts of Henry and Mary	SCBI 58, 1165A;
			BM 1849,0621.1
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?p
			artid=1&assetid=1339161&objectid=895669

## Reverse die

Dia	Chield	Ducientian	Emana /daaiga	Imagen
Die	Shield	Projection	Errors / design	images
			elements	
unique	16/15	bisects spine of E and	medium thistles	SCBI 58, 1165A;
		passes through stop	either side of	BM 1849,0621.1
		between N & S	escutcheon	http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339162&objectid=895669

## Type II – Regular issue

Ryals

Obverse dies

Die	Shield	Projection	Errors /design	Images
			elements	
A1	16/16	bisects & & distal	no contraction above	<i>SCBI 35</i> , 1121/H
		limbs of C	V; no serifs on small	http://www-img.fitzmuseum.cam.ac.uk/img/
			ampersands	emc/300jpg/1035_1121obv.jpg
A2	16/15	prox. third & & distal		Spink 57, 29/4/87, 223, J.K.R.Murray Coll <sup>n</sup> ;
		third S; E of DEI		Heritage 2/6/06, 14855
		under bottom lis		http://www.mcsearch.info/ext_image.
				html?id=629462
A3	16/15	prox. & & prox. C; E	no jewels on crown	P (Plate 1)
		of DEI under bottom	spikes; line around	
		lis	escutcheon; blunted	
			serifs; feint inner	
			guide line	
A4	16/15	bisects & & C	blunted serifs on	DNW 7/10/04, 716
			small 2 <sup>nd</sup> ampersand;	https://www.dnw.co.uk/auction-archive/
			feint inner guide line	lot-archive/lot.php?department=Coins&lot_
				id=104654

Die	Shield	Projection	Errors /design	Images
			elements	
A5	16/14	prox. border & &	HENRC <sup>9</sup> ; no serif 2 <sup>nd</sup>	Spink 57, 29/4/87, 224, J.K.R.Murray Coll <sup>n.</sup>
		prox. border C	ampersand	(Spink/Bowers/Ruddy 19/2/76, 214, Dundee
				Coll <sup>n.</sup> );
				http://www.cngcoins.com/Coin.
				aspx?CoinID=247732
A6	16/13	distal third & &		<i>SCBI 58</i> , 1170 and 1171;
		bisects C		DNW 17/9/13, 323
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=234551
A7	16/12	prox. third & & prox.	no serif 2 <sup>nd</sup>	<i>PF memorial list 01</i> , 359 (CNG 87, 18/5/11,
		third C	ampersand	2128);
				BM 1946,1004.710
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection image gallery.aspx?partid=1&
				assetid=1339190&objectid=895667
A8	15/14	prox. limb & & distal	no serifs either	Spink 57, 29/4/87, 225, J.K.R.Murray Coll <sup>n.</sup> ;
		tip S	ampersand; lion	BM 1910,0405.1
		*	displaced to l. on	http://www.britishmuseum.org/research/
			shield	collection_online/collection_object_details/
				collection image gallery.aspx?partid=1&
				assetid=1339177&objectid=895668
A9	12/12	distal limb & &		SCBI 58, 1169;
		bisects C		BM 1867,0715.3
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339211&objectid=895665
A10	12/12	prox. limb & & distal		Spink 119, 4/3/97, 354, Douglas Coll <sup>n.</sup>
		limb S		http://www.spink.com/lot-description.
				aspx?id=1012974
A11	12/11	stop after & & prox.		SCMB 709, J78 (Glendining 24/3/77, 496)
		border C		
A12	12/11	between A & & &		SCBI 58, 1168;
		bisects S		Spink 189/7018, 27/6/07, 153, Wilson Coll <sup>n.</sup>
				(Baldwin 7/5/03, 405)
				http://www.spink.com/lot-description.
				aspx?id=7018153
A13	12/11	prox. limb & &	no serif 1 <sup>st</sup>	<i>PF list</i> 8, 96, 381, and <i>Summer</i> list 94, 375;
		bisects S	ampersand; gap	SCBI 35, 1120
			between lion's head	http://www-img.fitzmuseum.cam.ac.uk/img/
			and inner border of	emc/300jpg/1035_1120obv.jpg
			shield	
A14	12/11	bisects & & prox.		Sotheby, 15-16/6/72, 499, Bridgewater Hse.
		border C		Coll <sup>n</sup> ;
				Triton VIII, 1821
				http://www.cngcoins.com/photos/big/681821.
				jpg

Die	Shield	Projection	Errors /design	Images
			elements	
A15	12/11 or	bisects & & distal		SCBI 35, 1122/H
	?10	limb of S		http://www-img.fitzmuseum.cam.ac.uk/img/
				emc/300jpg/1035_1122obv.jpg
A16	12/11	prox. limb & & stop	V of SCOTORV sits	Baldwin Winter list 12-13, SC005;
		between R & S	on l. limb of orb cross	Spink 189/7018, 27/6/07, 152, Wilson Coll <sup>n.</sup>
				http://www.spink.com/lot-description.
				aspx?id=7018152
A17	12/10	bisects & & distal	no jewels on band of	Sotheby, 15-16/6/72, 498, Bridgewater Hse.
		limb of S	crown	Coll <sup>n.</sup> ( <i>NCirc.</i> , Feb. 76, 1154);
				DNW 5/12/12, 666
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=223485
A18	11/11	prox. limb & & prox.		SCBI 35, 1119/A;
		third of S		DNW 63, 7/10/04, 715, McDonald Coll <sup>n.</sup>
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=104653
A19	10/11	distal limb & &	only 3 fleur-de-lis on	Spink 189/7018, 27/6/07, 151, Wilson Coll <sup>n.</sup>
		immediatly beneath	upper outer border of	(Glendining, 26/10/60, 909, Lockett Coll <sup>n.</sup> )
		С	shield	http://www.spink.com/lot-description.
				aspx?id=7018151
A20	10/11	prox. border & &	I of HENRIC	SČBI 58, 1182;
		prox. border C	rendered by poorly	BM 1939,0319.22
			defined C, thus	http://www.britishmuseum.org/research/
			HENRCC	collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339293&objectid=895663
A21	10/11	distal limb & & prox.	only 4 fleur-de-lis on	Spink/Bowers/Ruddy 19/2/76, 219, Dundee
		third of C	upper outer border of	Coll <sup>n</sup> .;
			shield	BM E.2632
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection image gallery.aspx?partid=1&
				assetid=1339331&objectid=895662

B1	12/12	bisects & & C;		<i>PF list 16</i> , 99, 412;
		bottom lis above I		NCirc. May 81, 4064
B2	12/12	bisects & & C;		SCBI 58, 1174;
		bottom lis		DNW 63, 7/10/04, 717, McDonald Coll <sup>n.</sup>
		points between I & E		https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=104655
B3	12/12	bisects & & C;	well defined oval tops	SCBI 58, 1185;
		bottom lis above E	to thistles	http://www.kittredgecollection.org/display/
				d1e141206
B4	12/12	distal third & & prox.	HENRC	SCBI 58, 1184;
		border C; bottom		Spink 189/7018, 27/6/07, 154, Wilson
		lis double stamped		Coll <sup>n.</sup> http://www.spink.com/files/
		(counted as one)		lotMain/7018/7018_154_1.jpg

B5	12/12	bisects & & C	small ampersands,	Spink 179/6029, 29/3/06, 122, LaRiviere
			no serif on 2 <sup>nd</sup> &; no	Coll <sup>n.</sup> ;
			ornament on r. inner	BM E.2630
			arch of crown	http://www.britishmuseum.org/research/
				collection online/collection object details/
				collection image gallery.aspx?partid=1&
				assetid=1339202&objectid=895666
B6	12/12	prox. limb & & back		SCBI 35, 1123;
		of C & distal tip S		SCBI 35, 1124
				http://www-img.fitzmuseum.cam.ac.uk/img/
				emc/300jpg/1035_1124obv.jpg
B7	12/11	distal limb & & prox.	small ampersands	Noble 72, 26-28/3/03, 1153
		border C		http://www.noble.com.au/auctions/
				lot/?id=39196
B8	12/11	bisects & & C	small ampersands,	Spink 156/1286, 15/11/01, 268, Van Roekel
			bottom lis above I	Coll <sup>n.</sup> ( <i>NCirc.</i> Oct/73, 7974)
B9	12/11	bisects & & C	upper limb of C of	Glendining 6/3/74, 151, Hird Coll <sup>n</sup> ;
			HENRIC bifurcates;	BM 1959,1206.1
			die crack between	http://www.britishmuseum.org/research/
			lion's l. paw & 11 <sup>th</sup>	collection_online/collection_object_details/
			inner lis; arms of orb	collection_image_gallery.aspx?partid=1&
			cross merge with	assetid=1339337&objectid=895661
			circle of denticles	
B10	12/11	bisects & & distal		SCBI 58, 1173;
		limb & border S		BM E.2631
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
		-		assetid=1339285&objectid=895664
B11	12/11	bisects & & prox.	double lis behind	SCBI 58, 1186-7;
		third of C; DEI	lion's rump	Spink 119, 4/3/97, 355, Douglas Coll <sup>n.</sup>
		spaced, bottom lis		(Glendining 18/6/57, 341, Lockett Coll <sup>n.</sup> )
		above E		http://www.spink.com/lot-description.
Dia	10/11			aspx?id=13012655
B12	12/11	distal limb & & distal		SCB1 58, 1188;
		limb & border S		Triton XVII 7-8/1/14, 1489
				http://www.cngcoins.com/Coin.
D12	12/11		la stran aftern	aspx?CoinID=247722
B13	12/11	prox. third & & stop	no stop after	P(Plate 1);
		between R & S	SCOTORV; foot of V	DNW 1//9/13, 325, Chesser Coll <sup>m</sup>
			rests on I. arm of orb	(Glendining 22-4/ 1/52, part 1364, V.J.E.
			cross	Ryan Coll <sup>**</sup> , Part II)
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
D14	12/11	1.:		id=234553
ы4	12/11	Disects & prox.		
		border C; bottom lis		Omnicoin, coinpeople2007 coll <sup>a</sup> PC17,
		points to prox. side of		group 2
D1F	12/11	toot of l	omall amparan da	http://www.omnicoin.com/viewcoin/935296
C10	12/11	prox. quarter of & &	sman ampersands,	info/out image html?id 670594
		Disects 5	thistle areally the	injo/exi_image.nimi:ia=0/0584
1	1	1	nuishe smaller than r	

DIC	10/11	1: ( 1 ( 1 : 1 / 0 ) )	( )(1 ) 1 C	
В16	12/11	distal third & & C	stops either side of	Spink 57, 29/4/87, 227, J.K.R.Murray Coll <sup>n</sup>
			orb cross directly	
			above horizontal arm	
D15	10/11	.1 . 1 .	of cross	D 11 : 10 10 10/10/00 100/
B17	12/11	prox. third & prox.	HENRIC	Baldwin 18, 12-13/10/98, 1894
D10	10/11	border C		Dellerin 20.7.0/5/02.674
B18	12/11	bisects & & prox.	no bottom inner ils;	Baldwin 30, $7-8/5/02$ , $6/4$ ;
		border C; bottom lis	2 <sup>nd</sup> ampersand has	World of C., 3/11/0/, lusomosa
		points to distal side of	thickened proximal	http://www.worldofcoins.eu/forum/index.
D10	12/10	foot of E	limb	php/topic,892.0/nowap.html
B19	12/10	bisects & & S	small ampersands,	SCBI 58, 1176-8;
<b>D</b> 20	12/10	literate d' la mura	especially 2 <sup>nd</sup>	Spink 57, 29/4/87, 226, J.K.R.Murray Coll <sup>n</sup>
B20	12/10	bisects & & prox.		SCBI 35, 1125
		border C	squeezed in between	nttp://www-img.fitzmuseum.cam.ac.uk/img/
			R and C	<i>emc/300jpg/1035_11250bv.jpg</i> and
				Spink 189/7018, 27/6/07, 155, Wilson Coll <sup>n.</sup>
				(DNW 11/12/02, 287; Spink/Bowers/Ruddy
				19/2/76, 222, Dundee Coll <sup>n.</sup> )
				https://www.spink.com/lot-description.
				aspx?id=7018155
B21	12/10	prox. third & & S	large ampersands	Bonhams 17/10/06, 1707, Clarendon Coll <sup>n</sup> ;
		-		Spink 39, 6/12/84, 129, A. Mallinson Coll <sup>n.</sup>
B22	12/11	bisects & & C	r. upper outer fdl	Triton XVII 7-8/1/14, 1501
			double struck	http://www.cngcoins.com/Coin.
				aspx?CoinID=247734
B23	11/11	bisects & & foot of S		SCBI 58, 1172;
				CNG 91, 19/9/12, 1571 (Triton XIII, 5/1/10,
				2113; St. James 7, 531)
				http://www.cngcoins.com/photos/
				big/83002113.jpg
B24	10/11	bisects & & prox.	only 3 lis on top	Spink 119, 4/3/97, 357, Douglas Coll <sup>n</sup> ;
		border of C	border of shield	St James 12, 5/11/09, 1403, Major Poll
				Coll <sup>n.</sup> <i>http://www.mcsearch.info/ext_image.</i>
				html?id=243903
B25	12/10	bisects & & prox. foot	ornate serifs on first	Coinage of E.
		of S	ampersand	http://www.coinageofengland.co.uk/ryal-
				58813.htm

C1	12/12	prox. tips of D &	Spink 64, 23/6/88, 311 (Glendining 14/5/75,
		through distal limbs	12, Gilboy Coll <sup>n</sup> );
		of E	Heritage 7/1/08, 52350 http://www.mcsearch.
			info/ext_image.html?id=644779
C2	12/12	bisects A & R; inner	SČBI 58, 1223;
		bottom lis slightly to	PF Summer list, 94, 376
		r. of outer lis	
C3	12/12	just beneath distal	Baldwin 30, 7-8/5/02, 678;
		foot of A (through	SCBI 35, 1133
		stop) & between R	http://www-img.fitzmuseum.cam.ac.uk/img/
		& E	emc/300jpg/1035_1133obv.jpg

		1. 11		
C4	12/12	distal limb of A &		BM 2638
		prox. foot of E		http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1375678&objectid=1048907
C5	12/11	between A & D &	initial & terminal	SCBI 58, 1222;
		prox. third of E	stops equidistant	BM SSB,26.130
			from orb cross	http://www.britishmuseum.org/research/
				collection online/collection object details/
				collection image gallery aspx?partid=1&
				assetid-1375674&objectid-1048909
C6	12/11	between A & D &	terminal stop mid-	SCBI 58, 1224:
		bisects E	point between distal	SCBL 35, 1131
			foot of A and arm of	http://www.ima.fitzmu.coum.com.ac.uk/ima/
			orb crossi stop after	amc/200ipg/1025_1121aby ipg
			MADIA wariahla	emc/500jpg/1055_115100v.jpg
C7	12/11	distal foot of A &	M of SCOTORVM	SCBI 35, 1134.
0/	12/11	bisacta E	remunched over	DM E 2627
		DISECTS E	reputicited over	DIVI E.203/
			inispiaced M	
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
<u> </u>	10/10	1: ( ) 0 5		assetid=1339345&objectid=1048908
C8	12/12	Disects A & E		P. (Plate 2);
	or 11			Spink 12009, 28-29/3/12, 995, Magnus Coll <sup>m</sup>
				http://www.spink.com/files/
				lotMain/12009/12009_995_1.jpg
C9	12/11	prox. border D &	orb skewed to left of	P. (Plate 2);
		bisects E	crown	Heritage A. 18/4/11, 24811
				http://www.mcsearch.info/ext_image.
-				html?id=691679
C10	12/9	distal foot of A &		Sotheby, 15-16/6/72, 501, Bridgewater House
011	10/10	bisects E		Coll <sup>n.</sup>
CH	12/10	distal limb of A &	top of r. thistle above	SCB1 35, 1132;
		prox. foot of E	D	Heritage 4/1/10, 22885
				http://www.mcsearch.info/ext_image.
-				html?id=670583
C12	12/11	distal foot of A &	top of r. thistle just	Kittredge, 8462, Kittredge coll <sup>n.</sup>
		distal third of R	below prox. foot of D	http://www.kittredgecollection.org/display/
				d1e119122
C13	11/10	distal foot of A &		P. ( <b>Plate 2</b> );
011	11/10	distal third of R		NCirc. Oct. 94, 6535
CI4	11/10	distal foot of A &		<i>PF list 11</i> , 97, 460;
		distal foot of R		BM 1946,1004.709
				http://www.britishmuseum.org/
				research/collection_online/collection_
				object_details/collection_image_gallery.
				aspx?assetId=1375662&
				objectId=1048910&partId=1
C15	11/10	distal foot of A &		P. no image available
		between E & G		

D1	12/10	bisects A & E	P. ( <b>Plate 2</b> );	
			SCBI 58, 1220	)-1

### Reverse dies

1565

Die	Thistle	Projection	Errors /design	Images
	mm.		elements	-
51	medium	prox. tip foot of D &		SCBI 58, 1166-7;
		between I & N		SCBI 35, 1121
				http://www-img.fitzmuseum.cam.ac.uk/
				img/emc/300jpg/1035_1121rev.jpg
52	medium	distal third of D &	edged scroll	P. (Plate 1);
		prox. third of N		Heritage 2/6/06, 14855 (Heritage 10/1/05,
				23179) http://www.mcsearch.info/ext_image.
				html?id=629462
53	medium	bisects D & distal	DISCIPENT <sup>R</sup> : ; edged	DNW 9-10/12/03, 458, Davidson Coll <sup>n</sup> ;
	above +	third of N	scroll; feint inner	Spink 57, 29/4/87, 224, J.K.R.Murray Coll <sup>n.</sup>
			guide line	(Spink/Bowers/Ruddy, 19/2/76, 214, Dundee
				Coll <sup>n.</sup> )
54	medium	between D & E &	DISCIPENT <sup>R</sup> : ; edged	SCBI 58, 1170-1;
	to left	between N & I	scroll; feint inner	BM 1946,1004.710
	of +		guide line	http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339193&objectid=895667
55	medium	bisects D & prox.	DISSIPENT <sup>R</sup> :;	SCBI 58, 1168-9;
		upright of N	developed die crack	SCBI 35, 1120
			from R of VIRES to	http://www-img.fitzmuseum.cam.ac.uk/
			stop between T & D	img/emc/300jpg/1035_1120rev.jpg
56	medium	between D & E &	edged scroll; no serif	SCBI 35, 1119;
		distal upright of N	on ampersand	BM 1910,0405.1
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339179&objectid=895668

61	medium	prox. foot of D &	INIMCI	Spink 57, 29/4/87, 225, J.K.R.Murray Coll <sup>n.</sup>
		between · & I		(Glendining 18/6/57, 339, Lockett Coll <sup>n.</sup> );
				SCBI 35, 1122
				http://www-img.fitzmuseum.cam.ac.uk/
				img/emc/300jpg/1035_1122rev.jpg

62	medium	prox_limb of D &	stop under small R of	Spink 119 4/3/97 357 Douglas Coll <sup>n.</sup>
02	incurum	prox. limb of N	DISSIDENT <sup>R</sup>	BM E 2630
				http://www.hritishmuseum.org/research/
				collection online/collection object details/
				collection_online/collection_object_defails/
				conection_trage_gunery.uspx:purtue=1
63	medium	prox_limb of D &	F <sup>9</sup> · small lateral	SCRI 58 1182-3.
	linearann	bisects small R	protuberance on	BM 1939 0319 22
			distal upright of N of	http://www.hritishmuseum.org/research/
			INIMICI	collection online/collection object details/
				collection_image_gallery_aspx?partid=1&
				assatid-13302058robjectid-805663
64	medium	bisects D & prox.	I of DISSIPENT <sup>R</sup>	DNW 8/10/02, 60, Brodie Coll <sup>n</sup> .:
		third of N	looks like re-cut E	BM E.2632
			(Die is similar to 62.	http://www.hritishmuseum.org/research/
			but projection along	collection online/collection object details/
			foot of date numerals	collection_image_gallerv_aspx?partid=1&
			bisects S and T cf	assetid=1339332&ohiectid=895662
			distal arm of V and T	usseim=1555552000jeeim=055002
			on 62)	
65	medium	distal border of D &	FI <sup>9</sup> becomes EI <sup>9</sup> if foot	SCBI 58, 1176-8;
		prox. limb of N	re-cut	BM 1959,1206.1
		1		http://www.britishmuseum.org/research/
				collection online/collection object details/
				collection image gallery.aspx?partid=1&
				assetid=1339339&objectid=895661
66	large	bisects D & prox.	1 5 of date far left;	<i>SCBI 58</i> , 1173 and 1175;
		upright of N	stop adjacent to small	BM E.2631
			R; no jewels on crown	http://www.britishmuseum.org/research/
			arches; developed	collection_online/collection_object_details/
			die crack $1^{st} \rightarrow V$ of	collection_image_gallery.aspx?partid=1&
			VIRES	assetid=1339286&objectid=895664
67	large	bisects D & distal tip	stop under small R	<i>SCBI 58</i> , 1174 and 1184;
		of of foot of I		DNW 17/9/13, 325, Chesser Coll <sup>n.</sup>
				(Glendining, 22-4/ 1/52, part 1364, V.J.E.
				Ryan Coll <sup>n</sup> , Part II)
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=234553
68	large	bisects D & prox.	stop under small R	SCBI 58, 1172;
		limb of N		Noble 72, 26-28/3/03, 1153
				http://www.noble.com.au//site/img/dyn/sales/
	1			s72/6633b.jpg
69	large	bisects D & between	stop distal to small	Baldwin 30, 7-8/5/02, 674;
		I & N	R; E of EXVRGAT	Iriton XIII, 5/1/10, 2113
			re-entered; r. lower	http://www.cngcoins.com/photos/
			tortoise foot long;	big/83002113.jpg
			small I in VIRES	

71	small	distal border of D &		SCBI 58, 1185 and 1188;
		bisects N		Triton XVII 7-8/1/14, 1489
				http://www.cngcoins.com/Coin.
				aspx?CoinID=247722
72	small	between D & E, &	T over R & I over C	<i>SCBI 58</i> , 1186 and 1223;
		prox. limb of N	(C double struck)	BM SSB,26.130
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1375676&objectid=1048909
73	small	prox. limb of D &		SCBI 58, 1187 and 1221;
		prox. border N		BM 1946,1004.709
		-		http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1375663&objectid=1048910
74	small	distal border of D &		Spink 57, 29/4/87, 227, J.K.R.Murray Coll <sup>n</sup> ;
		distal limb of N		SCBI 35, 1125
				http://www-img.fitzmuseum.cam.ac.uk/
				img/emc/300jpg/1035_1125rev.jpg
75	small	distal third of D &	small I in VIRES	SCBI 58, 1220 and 1222;
		bisects N		BM 2638
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1375679&objectid=1048907
76	small	prox. foot of D &	stop beneath small R	SCBI 35, 1131
		between I & N		http://www-img.fitzmuseum.cam.ac.uk/
				img/emc/300jpg/1035_1131rev.jpg
77	small	touches distal limb of	VERIS	SCBI 58, 1224;
		T & upper terminal		P. (Plate 1)
		of I		
78	small	prox. foot of D &	stop beneath small R	P. (Plate 1);
		prox. foot of I		DNW 21/6/12, 941
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=216497
79	small	bisects N & D	no crosses at base of	SCBI 35, 1132
			inner arches of crown	http://www-img.fitzmuseum.cam.ac.uk/img/
				emc/300jpg/1035_1132rev.jpg
710	large	bisects D & between	spaced date; N of	PF Summer list 94, 376;
		I & N	DISSIPENT <sup>R</sup> has	Spink 64, 23/6/88, 311 (Glendining 14/5/75,
			central upright.	12, Gilboy Coll <sup>n.</sup> );
				Davissons 32, 6/6/13, 217
				https://www.numisbids.com/n.
				php?p=lot&sid=487&lot=217

## Two-thirds ryals

The following conventions apply to descriptions of the contraction mark above the V of SCOTORV, and of the ampersands. These are signified by the configuration V/c: the presence or absence of a contraction mark and its form, if present, precedes the forward slash, and the presence (+) or absence (-) of serifs on the ampersands follows the slash, with the first mark referring to the first ampersand in the legend as read in a clockwise direction. Ampersands and the contraction mark do not feature on the coins of Mary's second widowhood.

Obverse dies

Die	Shield	Projection	Frrors / design	Images
	onnera		elements / V/m	iniugeo
Δ 1	(2) 12/10	bisects of & between		Spink 57 29/4/87 228 LK P. Murray Coll <sup>n.</sup>
I I	(:) 12/10	Discets O' & Detween	/ + +	Splitk 57, 29/4/07, 220, J.K.K.Mullay Coll,
		C & O		( <i>SCMB</i> Jun 58, SC854; Glendining 18/6/57,
				343, Lockett Coll <sup>n.</sup> )
A2	12/9	through distal border	/++	Spink 179/6029, 29/3/06, 123, LaRiviere
		ఈ & distal border		Coll <sup>n.</sup> (Baldwin 30, 7/5/02, 676; Spink 64,
		of O		23/6/88,110, Dunbar Coll <sup>n.</sup> ; SCMB 695
				Jul.76, J10);
				SCBI 35, 1126 (Glendining 25-6/6/80, 526)
				http://www-img.fitzmuseum.cam.ac.uk/
				img/emc/300jpg/1035_1126obv.jpg

B1	12/11	distal limb & &	/	SCBI 58, 1197;
		bisects C		SCBI 35, 1128
				http://www-img.fitzmuseum.cam.ac.uk/
				img/emc/300jpg/1035_1128obv.jpg
B2	11/9	bisects & & prox.	missing 2nd outer lis;	SCBI 58, 1190 and 1191;
		third of C	developed die flaw $\rightarrow$	P. ( <b>Plate 3</b> )
			serif to lower limb of	
			S; -/- +	
B3	12/10	prox. third ఈ &	-/++	Triton XVII 7-8/1/14, 1486 (Glendining
		touches back of C		18/6/57, 337B, Lockett Coll <sup>n</sup> ) and 1487;
				BM GHB,S.119
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339349&objectid=895660
B4	12/8	bisects & & touches	-/++	Glendining/Spink, 6/3/74, 152, Hird Coll <sup>n.</sup>
		prox. border of O		
B5	12/10	prox. third & &	•/+ -	SCBI 58, 1198 and 1199;
		bisects S		Spink 12027, 4-5/12/12, 148 (London 129,
				6/8/10, 860; NCirc., 3/10, SCO829)
				http://www.spink.com/lot-description.
				aspx?id=12027148

B8       12/10       bisects & stochastic actual ac	B6	12/10	bisects & touches	die crack developed	SCBI 58, 1192, 1193, 1194, 1195, and 1196.
Bit in the intervention of the interventintervent of the intervention of the intervention of th	20	12/10	prov. border of O	from lion's head to 2nd	Spink 13012 26 $27/3/13$ 657 ( <i>NCirc</i> 4/12)
B7       10/11       bisects & & touches distal tip of S       Initial cross punched over thistle head; only SCBI 58, 1200 and 1201;         B7       10/11       bisects & & touches distal tip of S       Initial cross punched over thistle head; only SCBI 35, 1127         B8       12/10       bisects & & prox. third of C       •/++         B8       12/10       bisects & & prox. third of C       •/++         B9       12/8       bisects & & between       developed circular			prox. border of O	innor line / 1	Split 15012, $20-27/5/15$ , $057$ (NCI/C., $4/12$ ,
B7       10/11       bisects & & touches distal tip of S       Initial cross punched over thistle head; only SCBI 35, 1127         B8       12/10       bisects & & prox. third of C       •/++         B8       12/10       bisects & & prox. third of C       •/++         B9       12/8       bisects & & between       developed circular				11111e1 118; -/++	SC0892; FF USI 3, 381)
B7       10/11       bisects & & touches distal tip of S       Initial cross punched over thistle head; only 3 lis on top border of shield; bifid serif on 2 <sup>nd</sup> &; -/++       SCBI 35, 1127         B8       12/10       bisects & & prox. third of C       •/++       DNW 63, 7/10/04, 718, McDonald Coll <sup>n</sup> ; BM E.2633         B9       12/8       bisects & & between       developed circular       PF memorial list 01. 360:					nttp://www.spink.com/lot-description.
B7       10/11       bisects & x touches distal tip of S       initial cross punched over thistle head; only 3 lis on top border of shield; bifd serif on 2 <sup>nd</sup> &; -/++       SCBI 35, 1207         B8       12/10       bisects & x prox. third of C       •/++       DNW 63, 7/10/04, 718, McDonald Coll <sup>n</sup> ; BM E.2633         B9       12/8       bisects & x between       developed circular       PF memorial list 01. 360:	D7	10/11	hissata x. Prtayahas	Initial anosa munahad	aspx:1d=13012657
B8       12/10       bisects & & prox. third of C       •/++       DNW 63, 7/10/04, 718, McDonald Coll <sup>n</sup> ; BM E.2633         http://www.britishmuseum.org/research/collection_online/collection_object_details/collection_image_gallery.aspx?partid=1& assetid=1339618&objectid=895659         B9       12/8       bisects & & between       developed circular	D7	10/11	distal time of C	initial cross punched	SCBI 36, 1200 and 1201;
B8       12/10       bisects & & prox. third of C         •/++       •/++       DNW 63, 7/10/04, 718, McDonald Coll <sup>n</sup> ; BM E.2633         http://www.britishmuseum.org/research/collection_online/collection_object_details/collection_image_gallery.aspx?partid=1& assetid=1339618&objectid=895659         B9       12/8			distai tip of S	over unsue nead; only	
B8       12/10       bisects & & prox. third of C       •/++       DNW 63, 7/10/04, 718, McDonald Coll <sup>n</sup> ; BM E.2633         http://www.britishmuseum.org/research/collection_online/collection_online/collection_online/collection_object_details/collection_image_gallery.aspx?partid=1& assettid=1339618&cobjectid=895659         B9       12/8       bisects & & between       developed circular       PF memorial list 01. 360:				3 lis on top border of	nttp://www-img.fitzmuseum.cam.ac.uk/img/
B8     12/10     bisects & & prox. third of C     •/++     DNW 63, 7/10/04, 718, McDonald Coll <sup>n</sup> ; BM E.2633       http://www.britishmuseum.org/research/ collection_online/collection_object_details/ collection_image_gallery.aspx?partid=1& assetid=1339618&cobjectid=895659       B9     12/8     bisects & & between     developed circular				shield; bifid serif on	emc/300jpg/1035_1127obv.jpg
B8       12/10       Disects & x prox. third of C       •/++       DNW 63, //10/04, /18, McDonald Coll~; BM E.2633         http://www.britishmuseum.org/research/ collection_online/collection_object_details/ collection_image_gallery.aspx?partid=1& assetid=1339618&objectid=895659         B9       12/8       bisects & & between       developed circular       PF memorial list 01, 360:	Do	10/10	1:	$2^{nd} \mathfrak{G}; -/++$	
BM E.2633         http://www.britishmuseum.org/research/         collection_online/collection_object_details/         collection_image_gallery.aspx?partid=1&         assettid=1339618&objectid=895659         B9       12/8         bisects & & between       developed circular         PF memorial list 01.360:	88	12/10	bisects & & prox.	•/++	DNW 63, //10/04, /18, McDonald Coll <sup>…</sup> ;
http://www.britishmuseum.org/research/         collection_online/collection_object_details/         collection_image_gallery.aspx?partid=1&         assetid=1339618&objectid=895659         B9       12/8         bisects & & between       developed circular         PF memorial list 01.360:			third of C		BM E.2633
collection_online/collection_object_details/         collection_image_gallery.aspx?partid=1&         assetid=1339618&objectid=895659         B9       12/8         bisects & & between       developed circular         PF memorial list 01, 360:					http://www.britishmuseum.org/research/
collection_image_gallery.aspx?partid=1&       assetid=1339618&objectid=895659       B9     12/8       bisects & & between     developed circular       PF memorial list 01, 360:					collection_online/collection_object_details/
assetid=1339618&objectid=895659 B9 12/8 bisects & & between developed circular PF memorial list 01, 360:					collection_image_gallery.aspx?partid=1&
B9  12/8  bisects & & between  developed circular  PF memorial list 01, 360;					assetid=1339618&objectid=895659
	B9	12/8	bisects & & between	developed circular	<i>PF memorial list 01</i> , 360;
S & C die flaw between 1 <sup>st</sup> O Spink 5014, 28/9/05, 1254			S & C	die flaw between 1 <sup>st</sup> O	Spink 5014, 28/9/05, 1254
of SCOTORVM and https://www.spink.com/lot-description.				of SCOTORVM and	https://www.spink.com/lot-description.
side of crown; -/++ aspx?id=50141254				side of crown; -/++	aspx?id=50141254
B10   12/9   bisects & touches   $\cdot/++$   Spink 7018, 27/6/07, 158, Wilson Coll <sup>n</sup> ,	B10	12/9	bisects & & touches	•/++	Spink 7018, 27/6/07, 158, Wilson Coll <sup>n</sup> ,
back of C (DNW 17/3/04, 786; Baldwin 30, 7-8/5/02,			back of C		(DNW 17/3/04, 786; Baldwin 30, 7-8/5/02,
677; Spink/Bowers/Ruddy 19/2/76, 221,					677; Spink/Bowers/Ruddy 19/2/76, 221,
Dundee Coll <sup>n</sup> ; Glendining 18/6/57, 342,					Dundee Coll <sup>n</sup> ; Glendining 18/6/57, 342,
Lockett Coll <sup>n.</sup> )					Lockett Coll <sup>n.</sup> )
https://www.spink.com/lot-description.					https://www.spink.com/lot-description.
aspx?id=7018158					aspx?id=7018158
B11 12/9 through distal limb & large shield and AMR HS-0573 ( <i>NCirc.</i> 9/83, 5656)	B11	12/9	through distal limb &	large shield and	AMR HS-0573 (NCirc. 9/83, 5656)
& between C & O surmounting crown; http://www.amrcoins.com/coins-for-sale/HS-			& between C & O	surmounting crown;	http://www.amrcoins.com/coins-for-sale/HS-
-/++ 0573/				-/++	0573/
B12   12/11   prox. & & tip of distal compressed RV in   P. (Plate 3)	B12	12/11	prox. & & tip of distal	compressed RV in	P. ( <b>Plate 3</b> )
limb of S SCOTORV; -/++			limb of S	SCOTORV; -/++	
B13         ?11/?8         distal limb & &         die flaw through         NCirc. 11/95, 6237	B13	?11/?8	distal limb	die flaw through	NCirc. 11/95, 6237
bisects C second O of			bisects C	second O of	
SCOTORV and RI of				SCOTORV and RI of	
HENRIC;				HENRIC;	
				_/?_	

C1	12/11	distal limb & & prox.	-/++	P. (Plate 3)
		border of O		
C2	12/11	distal limb	no gap between DEI	Bonhams 17/10/06, 1708, Clarendon Coll <sup>n</sup> .
		bisects O	& GRA; -/++	(Spink 38, 10-11/10/84, 310)
C3		beneath & & beneath	-/++	Glendining 13/12/43, 1200, Drabble Coll <sup>n.</sup>
		0		
C4	12/11	prox. third & & C	-/++	SCBI 58, 1202;
				NCirc. 4/90, 1826 (Spink 57, 29/4/87, 230,
				J.K.R.Murray Coll <sup>n.</sup> )
C5	12/11	distal limb & & prox.	-/++	SCBI 58, 1203 and 1204
		border of O		

#### David J Rampling

C6	12/9	distal tip ఈ &	/++	SCBI 58, 1205;
		between O & T;		CNG Coin Shop 783988 (Spink 179/6029,
		bottom lis above G		29/3/06, 125, LaRiviere Coll <sup>n</sup> ; Glendining
				14/5/75, 14, Gilboy Coll <sup>n</sup> )
				http://www.cngcoins.com/Coin.
				aspx?CoinID=99794
				(https://www.spink.com/lot-description.
				aspx?id=6029125)
C7	12/9	distal third	- /++	BM E.2635
		between S & C		http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339651&objectid=895656
C8	10/10	distal tip & & prox.	only 3 fleur-de-lis on	NCirc., 9/87, 5231;
		border of O	upper outer border of	P. (Plate 3)
			shield; two stops after	
			V of SCOTORV; -/++	

D1	12/11	immediatly beneath		Spink,/Bowers/Ruddy 19/2/76, 224, Dundee
		stop & bisects G		Coll <sup>n</sup> (Glendining 18/6/57, 344[B], Lockett
				Coll <sup>n.</sup> );
				P. (Plate 3)
D2	12/9	stop & distal border	no initial or terminal	Studio list 46, 5271
		of R	stops	
D3	12/8	distal border of D &		<i>SCBI 58</i> , 1226 and 1227;
		bisects G		SCBI 35, 1135
				http://www-img.fitzmuseum.cam.ac.uk/img/
				emc/300jpg/1035_1135obv.jpg
D4	12/10	bisects A & R		SCBI 58, 1228 (Spink 57, 29/4/87, 238,
				J.K.R.Murray Coll <sup>n.</sup> );
				BM 1914, 1206. 1
				http://www.britishmuseum.org/research/
				collection_online/collection_object_details/
				collection_image_gallery.aspx?partid=1&
				assetid=1339642&objectid=895657
D5	12/10	beneath A & touches	small gap between	P. (Plate 3)
		prox. base of E	R & E	
D6	12/10	distal third of A &	large gap between R	BM E2639
		just touches prox.	& E; developed die	http://www.britishmuseum.org/research/
		base of E	crack between I &	collection_online/collection_object_details/
			N of REGINA and	collection_image_gallery.aspx?partid=1&
			passing through to	assetid=1375685&objectid=1048905
			inner arch of crown	

E1	12/9	through stop & back	no contraction mark	SCBI 58, 1255;
		of G	above V	Spink 5014, 28/9/05, 1255
				https://www.spink.com/lot-description.
				aspx?id=50141255

## Reverse dies

Die	Projection	Errors / design elements /	Images
	,	contractions	
51a	bisects D & through prox.	no date; colon stops after	Spink 57, 29/4/87, 228, J.K.R.Murray Coll <sup>n.</sup>
	limb of N	DEVS & DISSIPENT <sup>R</sup>	(SCMB, 6/58, SC854; Glendining 18/6/57,
			343, Lockett Coll <sup>n.</sup> );
			SCBI 35, 1126 (Glendining 25-6/6/80, 526)
			http://www-img.fitzmuseum.cam.ac.uk/img/
			emc/300jpg/1035_1126rev.jpg
51	identical to die 1a but with	date added	<i>SCBI 58</i> , 1190, 1194, and 1197;
			BM GHB, S.119
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid=1&
		1	assetid=1339350&objectid=895660
52	bisects D & through distal	single stops	<i>SCBI 58</i> , 1191, 1192, 1193, 1198 and 1199;
	limb of N		SCBI 35, 1128
			http://www-img.fitzmuseum.cam.ac.uk/img/
			emc/300jpg/1035_1128rev.jpg
			and
			Triton XVII 7-8/1/14, 1486 (Glendining
			18/6/57, 337[B], Lockett Coll <sup>n</sup> )
			http://www.cngcoins.com/Coin.
			aspx?CoinID=247719
53a	beneath D & through	no date; colon stops after	Spink 179/6029, 29/3/06,123, LaRiviere
	distal limb of N	DISSIPENT <sup>R</sup> ; INIMCI;	Coll <sup>n.</sup> (Baldwin 30, 7/5/02, 676; Spink 64,
		two stops preceding legend	23/6/88, 110, Dunbar Coll <sup>n</sup> ; <i>SCMB</i> , 695
			7/76, J10)
			https://www.spink.com/lot-description.
			aspx?id=6029123
53	identical to die 3a but with	date added	<i>SCBI</i> 58, 1195, 1196, 1200 and 1201;
			BM E.2633
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid=1&
			assetid=1339620&objectid=895659

61	prox. third of D & bisects	fourth date numeral	NCirc., 4/12, SC0892 (Spink 13012, 26/3/13,
	N	marginally higher than	657; <i>PF list 5</i> , 381)
		third	http://www.spink.com/lot-description.
			aspx?id=13012657
			and
			DNW 17/9/13, 327, Chesser Coll <sup>n.</sup>
			https://www.dnw.co.uk/auction-archive/
			lot-archive/lot.php?department=Coins&lot_
			id=234555
62	beneath T through stop &	straight edged scroll, die	NCirc., 6/89, 3337 (NCirc., 5/87, 3021; Spink
	beneath N	flaw 'blob' under R of	3017, 12/11/03, 137)
		VIRES	https://www.spink.com/lot-description.
			aspx?id=3017137
			and
			BM E.2634
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid=1&
			assetid=1339633&objectid=895658
63	touches distal arm of T &		Spink 189/7018, 27/6/07, 158, Wilson Coll <sup>n.</sup>
	through I		(DNW 17/3/04, 786; Baldwin 30, 7-8/5/02,
			677; Spink,/Bowers/Ruddy 19/2/76, 221
			Dundee Coll <sup>n</sup> ; Glendining 18/6/57, 342,
			Lockett Coll <sup>n.</sup> )
			https://www.spink.com/lot-description.
			aspx?id=7018158
64	through stop & I	C re-entered over third	<i>SCBI 58</i> , 1202, 1203 and 1204;
		I of INIMICI; additional	CNG Coin Shop 783988 (Spink 6029,
		stop under small R of	29/3/06, 125, LaRiviere Coll <sup>n</sup> ; Glendining
		DISSIPENT <sup>R</sup> ; & double	14/5/75, 14, Gilboy Coll <sup>n.</sup> )
		struck	http://www.cngcoins.com/Coin.
65			aspx?CoinID=99794
65	prox. quarter of D &	tourth date numeral lower	AMR HS-0573 ( <i>NC irc.</i> 9/83, 5656)
	bisects N	than third	http://www.amrcoins.com/coins-for-sale/HS-
66	hissats E. 9. distal un dista	amall B of DISCIDENTER	0573/
66	Disects E & distal upright	small " OF DISSIPEN I"	P. (Plate 2)
	OI IN	entered over V	

71	beneath T, through stop &	numeral 6 punched over	SCBI 58, 1205, 1226 and 1227;
	bisects N	inverted 6 (or die flaw)	BM E.2635
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid=1&
			assetid=1339654&objectid=895656
			and
			SCBI 35, 1135
			http://www-img.fitzmuseum.cam.ac.uk/img/
			emc/300jpg/1035_1135rev.jpg
72	bisects D & through distal	crude tortoise in shape of	Spink 6029, 29/3/06, 130, LaRiviere Coll <sup>n.</sup>
	limb of N	bowling pin	(Spink 57, 29/4/87, 237, J.K.R. Murray Coll <sup>n.</sup> )
			https://www.spink.com/lot-description.
			aspx?id=6029130
			and
			BM 1914, 1206. 1
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid=1&
			assetid=1339643&objectid=895657
73	between D & E, & through	small A in EXVRG <sup>A</sup> T	<i>SCBI 58</i> , 1228 (Spink 57, 29/4/87, 238,
	I		J.K.R.Murray Coll <sup>n</sup> )
			P. (Plate 2)
74	touches distal arm of T &	no cross on crown, crown	SCBI 58, 1225;
	beneath N	removed from inner circle	BM E2639
			http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid=1&
			assetid=1375686&objectid=1048905
75	through prox. upright of D	large date numerals	Spink 2015, 5426
	∣& prox. upright of N		

## David J Rampling

# One-third ryals

## Obverse dies

Die	Shield	Projection	Errors /design	Images
			elements/ positioning	
			tail of <sup>9</sup>	
A1	12/10	base of E & tip of	usual stops incl. after	SCBI 58, 1216
		bottom limb of C	MARIA (cf A2);	
			across upper tip of C	
A2	12/11	touches base of E,	no stops before or	SCBI 58, 1214 and 1215;
		prox. tip of T &	after MARIA or after	DNW 5/12/12, 667
		beneath O to distal	SCOTORVM; tail of 9	https://www.dnw.co.uk/auction-archive/
		limb of C	almost touches tip of	lot-archive/lot.php?department=Coins&lot_
			base limb of C	id=223486
A3	12/11	bisects E & touches	touches tip of base	SCBI 58, 1208 and 1209;
		distal tips of C	limb of C, body of <sup>9</sup>	Numismatik 153, 12/12/11, 897
		-	almost touches tip of	http://www.acsearch.info/media/images/
			upper limb of C	archive/86/1358/1169192.m.jpg
A4	12/11	touches base of E,	pointing to, but gap	NCirc., 7/95, 4193 (Glendining 18/6/57,
		prox. tip of T &	from base tip of C	337C, Lockett Coll <sup>n</sup> )
		bisects C	_	
A5	12/9	base of E, prox. tip of	·GR·A · ; flat spot	SCBI 58, 1212 and 1213 (Obverse double
		T & prox. border O	on shield above G;	struck on this coin creating the legend +
			almost touches tip of	$MARIA \cdot ET \cdot HENRIC^9 \cdot EI \cdot GRA \cdot R \cdot R \cdot ET \cdot$
			base limb of C	R · SCOTORVM ;
				SCBI 35, 1129
				http://www-img.fitzmuseum.cam.ac.uk/img/
				emc/300jpg/1035_1129obv.jpg
				and
				CNG 87, 18/5/11, 2127 (Spink 6029, 29/3/06,
				126, LaRiviere Coll <sup>n.</sup> )
				http://www.cngcoins.com/Coin.
				aspx?CoinID=185590
A6	12/10	bisects T & O	no ornaments on	SCBI 58, 1210
			band of crown or	
			between crosses and	
			fdl; tail of <sup>9</sup> points	
			between limbs of C	
A7	12/11	distal limb of T &	initial cross vertical	SCBI 58, 1211
		distal third of S	merges into M;	
			single stop between	
			SCOTORVM and	
			MARIA; tail of 9	
			points between limbs	
			of C	

A8	12/11	prox. limb of T &	cross surmounting	SCBI 58, 1217 and 1218;
		upper tip of C	crown displaced to	SCBI 35, 1130
			l.; touches tip of base	http://www-img.fitzmuseum.cam.ac.uk/img/
			limb of C	<i>emc/300jpg/1035_1130obv.j</i> pg
				and
				CNG 87, 18/5/11, 2129 (Spink 6029, 29/3/06,
				127, LaRiviere Coll <sup>n.</sup> ;
				Spink 57 29/4/87, 232, J.K.R. Murray Coll <sup>n</sup> )
				http://www.cngcoins.com/Coin.
				aspx?CoinID=185592
A9	?	bisects E & prox.	lower lis above stop;	P. (Plate 3)
		border of O	tail of 9 between limbs	
			of C	
A10	12/11	prox. limb of T &	inner arches of crown	Heritage 13-14/1/15, 36578
		prox. quarter of C	slender or absent; tail	P. (Plate 3)
			of <sup>9</sup> between limbs	
			of C	

B1	12/11	base of E & lower	gap between tail of <sup>9</sup>	DNW 8/10/02, 61, Brodie Coll <sup>n.</sup> (Spink/
		limb of S	and tip of base limb	Bowers/ Ruddy 19/2/76, 218, Dundee Coll <sup>n</sup> ;
			of C	Asherson Coll <sup>n</sup> , bt. Spink 1967; Glendining
				18-19/6/57, 338, Lockett Colln; Sotheby
				6-8/12/1909, 360 pt., Wakley Coll <sup>n</sup> ; Sotheby
				11-13/5/1903, 235, Murdoch Coll <sup>n</sup> .)
				https://www.dnw.co.uk/auction-archive/
				lot-archive/lot.php?department=Coins&lot_
				id=78993

C1	12/9	bisects T & prox.	l. fdl of crown points	Spink 57, 29/4/87, 233, J.K.R.Murray Coll <sup>n</sup> ;
		border O	to upright of R, not	P. (Plate 3)
			prox. to it as C2 & C3	
C2	12/9	stop between T and H	r. lion's paw slightly	Spink/Bowers/Ruddy 19/2/76, 217, Dundee
		& between C and O	detached from body	Coll <sup>n</sup> (Glendining 26/10/60, 910, Lockett
				Coll <sup>n.</sup> );
				Triton XVII 7-8/1/14, 1488
				https://www.cngcoins.com/Coin.
				aspx?CoinID=247721
C3	12/9	stop between T and H		SĈBI 58, 1219
		& bisects C		

D1	12/7	distal foot of A &	SCBI 58, 1229, 1230, 1231 and 1232;
	or 8	between R and E	SCBI 35, 1137
			http://www-img.fitzmuseum.cam.ac.uk/img/
			emc/300jpg/1035_1137obv.jpg
			and
			DNW 16/3/11, 597
			https://www.dnw.co.uk/auction-archive/
			lot-archive/lot.php?department=Coins&lot_
			id=197251

#### David J Rampling

#### Reverse dies

### 1565

Die	Projection	Contractions/Errors /	Images
		design elements	_
51	bisects E & M	spaced date	<i>SCBI 58</i> , 1208, 1213, 1214 and 1216;
			CNG 87, 18/5/11, 2129 (Spink 6029, 29/3/06,
			127, LaRiviere Coll <sup>n</sup> ; Spink 57, 29/4/87, 232,
			J.K.R. Murray Coll <sup>n</sup> )
			http://www.cngcoins.com/Coin.
			aspx?CoinID=185592
52	between D & E & through	spaced date; developed	SCBI 58, 1215;
	prox. foot of I	die flaw $\rightarrow$ scroll band	BM SSB,26.122
		extending to N of INIMICI	http://www.britishmuseum.org/research/
			collection_online/collection_object_details/
			collection_image_gallery.aspx?partid
			=1&assetid=1339732&objectid=895655
			and
			CNG 87, 18/5/11, 2127 (Spink 6029, 29/3/06,
			126, LaRiviere Coll <sup>n.</sup> )
			http://www.cngcoins.com/Coin.
			aspx?CoinID=185590
53	beneath D & through	contracted date;	<i>SĈBI 58</i> , 1209, 1210, 1211 and 1212;
	distal limb of N	DESSIPENT <sup>R</sup>	SCBI 35, 1129
			http://www-img.fitzmuseum.cam.ac.uk/img/
			emc/300jpg/1035_1129rev.jpg
			and
			Triton XVII 7-8/1/14, 1488
			http://www.cngcoins.com/Coin.
			aspx?CoinID=247721

61	between D & E and	+ · EXVRGAT · DEVS · ET ·	SCBI 58, 1217, 1218, 1219 and 1229;
	through distal foot of R	DISSIPENTVR · INIMICI ·	P. (Plate 3)
		EI <sup>9.</sup> ; tortoise incuse	

71	bisects E & between N	EXVRGAT · DEVS · ET ·	SCBI 58, 1230
	and I	DISSIPENTVR · INIMICI	
		· EI <sup>9</sup> · regular tortoise; · EI <sup>9</sup> ·	
		spaced out	
72	bisects E & through distal	legend as for 71, but · EI <sup>9</sup>	DNW 16/3/11, 597
	limb of R	closer to initial thistle;	https://www.dnw.co.uk/auction-archive/
		large contraction mark	lot-archive/lot.php?department=Coins&lot_
			id=197251
73	bisects E & M	DEXVRGAT · DEVS · ET ·	SCBI 58, 1231 and 1232;
		DISSIPENTVR · INIMICI ·	SCBI 35, 1138
		EIVS · regular tortoise	http://www-img.fitzmuseum.cam.ac.uk/img/
		_	emc/300jpg/1035_1138rev.jpg
74	bisects D & through stop	legend as 71; tortoise	Baldwin 96, 24/9/15, 3474
	between R & I	without legs	P. (Plate 3)

#### 1567

## Type III- Anomalous issues

# Ryals

Obverse dies

Die	Shield	Projection	Errors /design elements	Images
E1 (eB9)	12/11	bisects <sup>9</sup> & C	altered B9 die: regnal titles reversed, stop	SCBI 58, 1189
((0))			has extended distal serif	

F1	12/12	distal third of A &	diameter of inner ring = 33 mm from	P. (Plate 2)
		prox. foot of E	outer margins	
F2	12/11	bisects A & distal third	diameter of inner ring = 32 mm from	P. (Plate 2)
		of R	outer margins	

## Reverse dies

Die	Thistle	Projection	Errors /design elements	Images
	mm.			
e65	medium	distal border of D &	EI <sup>9</sup> - foot of E re-cut on all specimens; new	SCBI 58, 1189
		prox. limb of N	puncheon for tortoise	

711	large	prox. upright of D &	large date numerals; diameter of inner	P. (Plate 1)
		distal foot of N	circle from outer borders = 34 mm	
712	large	stop between T & D;	large date numerals; diameter of inner	P. (Plate 1)
		& prox. third of N	circle from outer borders = 32 mm	

## Appendix II: Counterfeits, copies and electrotypes

A case could be made for including the Type III – Anomalous issues as contemporary counterfeits, but as they seem to have been produced from either altered official dies, or dies requiring skilled minting techniques, I have excluded them on these grounds.

The declension of false coins into three categories is perhaps more arbitrary and less certain than the heading would suggest. Counterfeit coins are productions intended for deception, and are either contemporaneous with the genuine currency or later productions. Individual examples of Type I – Portraits issue ryal<sup>50</sup>, and Type II – Regular issue ryal<sup>51</sup> are known. The earliest reports of each of these coins are twentieth century recordings, so whether they are contemporary or modern is uncertain. They are both casts.

It is worth noting that a false crowned thistle countermark has been recorded on a ryal of James VI,<sup>52</sup> and there is no reason to exclude the possibility that such false revaluation marks were applied to Mary's coins. Their intended purpose might have been to validate a false coin or re-value a genuine piece; in either case the instigator stood to deprive the Crown of revenue.

Copies of ryals have been made for display or ornament and are usually easily distinguished from genuine coins by weight, fabric, and crude design. Examples are those produced by a Birmingham manufacturer in the late nineteenth century. These are stamped with a registration number or evidence of its erasure.<sup>53</sup>

Electrotypes of ryals and their fractions were also produced in the nineteenth and possibly twentieth centuries by museums for their own display purposes, and also for collectors. They are usually accurate reproductions of original coins, and may be mistaken as genuine if not bearing the electrotypist's mark. They may weigh within the weight range of genuine coins. A careful examination of the edge of electrotypes will reveal the join formed by the obverse and reverse plates. There are also uniface examples. A copper electrotype cliché of the obverse of the British Museum's portrait ryal is in the author's collection.<sup>54</sup>

<sup>50</sup> Murray and Finn 1976, 317. The earliest known history of this coin is in 1909. It appears to be a cast of the British Museum specimen and of similar weight. It differs from the host coin in being countermarked. The countermark "is very good and seems closely similar to those found on genuine coins", a pointer to the coin possibly being a contemporary forgery. The coin currently resides in the Spink & Son (London) reserved collection.

<sup>51</sup> Rampling and Taverner 1979, 550. This coin is a cast from die combination, A20/63, and bears a countermark, as do two of the five coins with this die link in the study. It is light at 370 grains. Like the Type I forgery, the coin shows some very minor die discrepancies when compared with host dies, probably as a consequence of tooling to improve the appearance of the cast. It was gifted to the NMS in 1967.

<sup>52</sup> Murray 1978, 73-74.

<sup>53</sup> Finn 1984, 217 and Finn 1985, 86.

<sup>54</sup> Rampling 2011(2012), 81, Fig. 1.
#### Appendix III: The palm tree and 'ane schell padocke'

The emblematic significance of the reverse design continues to puzzle numismatists. Emblems of the period were often characterised by a certain enigmatic mystique, and in this domain the palm tree/tortoise design excelled, as witnessed by the scope of interpretive ingenuity it has drawn from commentators. It may be well to revue these here before embarking on any fancies of my own.

A popular interpretation has drawn its inspiration from what appears to be a Tudor rose emblazoned on the tortoise's shell on some of the one-third ryals. This has led to the assumption that the tortoise represents Darnley because of his English ancestry through Margaret Tudor, and its ascent up the tree's trunk 'has been seen as an allegory depicting an ambitious Henry struggling to obtain a crown for himself'.<sup>55</sup> Nicholas Holmes has queried this 'intriguing story' on the grounds that the rose appears only on one denomination<sup>56</sup> and the palm tree is not an indigenous Scottish species. He further argues that such 'a blatant disparagement' of Darnley is unlikely to have been advertised on the coinage, and concludes that the palm tree may 'alert us to the possibility that the design might either have been inspired by events far from Scotland or contain some mythological reference understood in the 16<sup>th</sup> century but not today'.

In a comprehensive survey, Marion Archibald concluded that the emblem 'symbolises and celebrates the continuation of the Stewart dynastic tree into the future'.<sup>57</sup>

Lord and Lady Stewartby<sup>58</sup> have suggested that 'the most dramatic and important event of the year 1565', namely the Turkish attack on the Knights of St John in Malta, was possibly a stimulus for the design. An ardently Catholic queen may have expressed the deliverance of Christendom secured by the Knights' victory on her coinage, the palm providing 'an appropriate Mediterranean flavour' to sentiments conveyed by the scroll motto, 'Glory gives strength' and the legend 'Let God arise and let his enemies be scattered'. Such an interpretation is tempered by the fact that the same legend was used on the coins of preceding reigns, although it could have assumed a specific allusion in the political climate of 1565. The tortoise's 'struggle against the odds' is in keeping with the triumph over adversity, a device suggested by Mary's valuing of a particular tortoise jewel. This trinket, entrusted by Mary to Rizzio's brother, Joseph, following David's murder, suggests the tenuous proposition that the jewel had been a gift to Mary by David Rizzio, who apart from his secretarial duties, had been appointed head of the Mint in February 1566. They point out that the more direct identification of Rizzio with

<sup>55</sup> Holmes 2004, 24.

<sup>56</sup> A doubtful observation by Burns, previously noted.

<sup>57</sup> Marion Archibald, 'The Mary Queen of Scots palm-tree ryal revisited', paper presented at the BANS Congress, 5-7 April, 2013, Greenwich.

<sup>58</sup> Stewartby 2007, 227.

the tortoise occasioned by the impression of a Tudor rose on the back of the tortoise of the one-third ryal is an illusion.<sup>59</sup>

While there is no clear evidence for the Stewartby hypothesis, it is worth noting that a copy of *De Bello Rhodio Libri Tres* by Jacobus Fontanus was in Mary's library, perhaps attesting to an interest in the Knights of St. John.<sup>60</sup>

Mary's bibliographic resources are relevant in seeking a prototype for the palm and tortoise emblem. A printer's mark featured on the title pages of volumes that she subsequently used as the design source for many of her embroideries, featured frogs climbing up the trunk of a tree, and another book that also supplied patterns for her embroideries contained an emblem with toads and snakes pushing up the trunk of a palm tree.<sup>61</sup> One interpretation of a possible emblematic adaptation of these familiar images on the coinage is again disparaging to Darnley, in seeing the frogs as an allegory of Darnley's marital ambitions.<sup>62</sup>

The palm tree clearly served a self-identifying device, particularly the tree's resilience. An emblem Mary worked on a Bed of State bore the motto *Ponderibus virtus innata resistit*, ('Innate virtue resisteth oppression'),<sup>63</sup> a sentiment not too dissimilar from others she used on her embroideries and, indeed, on her coin.

A poem composed by Darnley<sup>64</sup> and sent to Mary has the lines:

The turtle for her mate More dule may not endure Than I do for her sake Who has mine heart in cure

Whilst 'turtle' refers to the turtledove, it may not be too fanciful to see the possibility of an appropriation of the homonym<sup>65</sup> as disguise was integral to emblematic design.

It should be noted that the translation of the auld Scots, 'schell padocke' is 'shelled frog' or 'shelled toad', and at least one early numismatist has '...a shell paddock, or lizzard creeping up the stem...<sup>266</sup> The term 'shell-lizard' has been applied to the armadillo.

<sup>59</sup> Ibid, 225.

<sup>60</sup> Sharman 1889, 161.

 <sup>61</sup> Michael Bath, 'Do tortoises climb trees? Emblematic coinage of Mary Queen of Scots', paper presented at The Society for Emblem Studies Eighth International Conference, Winchester, 28 July – 2 August, 2008.

<sup>62</sup> *ibid*.

<sup>63</sup> Palliser 1870, 237.

<sup>64</sup> Strickland 1884, 104.

<sup>65 &</sup>quot;Ther is a kyand of fishe that they call turtle …", Dunlop, P. [v.d.] 1685, in Dunlop, J. G. (ed.); *The Dunlop Papers*. Vol. III Letters and Journals 1663–1889, Butler and Tanner, London, 1939, 1953, p. 16.

<sup>66</sup> Cardonnel 1786, 98.

Certainly, some representations of the reptile on the coins are ambiguous, and may equally be interpreted as a lizard, armadillo or tortoise. There was a popular contemporary superstition that the lizard conceived through the ear and brought forth through the mouth, whence it was regarded as a symbol of the Logos, or Divine Wisdom.<sup>67</sup>

Mary's use of the palm tree and reptile emblem in tapestries worked during her captivity, suggest that it held personal and enduring significance. The religious connotations of the palm tree as the Tree of Life would have, in all probability, been familiar to her, as well as the Biblical references seemingly appropriate to her life's transitions: 'I was exalted like a palm tree in Engaddi...,<sup>68</sup> to 'a great multitude...took branches of palm trees',<sup>69</sup> precursor of Christ's death and resurrection. The significance of the emblem on the coin may well have changed when appropriated by Mary in her captivity.

The contemporary predilection for anagrams entices attempts at discovering a hidden message in the scroll motto DAT GLORIA VIRES, but endeavours so far have failed to yield a plausible result!

While the significance of the palm tree and reptile design can only be guessed at, its legacy as a conundrum is part of its created state as a true emblem. The abstractions intended by its various concrete elements, including the scroll motto, probably had personal, universal and popular meanings, or even no meaning for many of those through whose hands these coins passed. Later generations have been reluctant to relinquish its mystique as witnessed by the survival of the Crookston myth amongst historians and numismatists.

Mary's actual involvement with the design of her coinage is unknown, although she was clearly not ignorant in numismatic matters. Her library contained at least two numismatic works.<sup>70</sup> The featuring of palm trees on coins of the ancients may have appealed as a link in her regal lineage.

<sup>67</sup> Bayley 1912(1996), 68.

<sup>68</sup> Ecclesiasticus xxii, 14

<sup>69</sup> *John* xii, 12-13

<sup>70</sup> Sharman 1889, 116 and 152. The Ordinare of the Money in France ('Ordonance sur le faict des monnoyes...avec le pourtraict de toutes les especes de monnoye que le roy vault', 1540), and The first part of the Promptuarie of Medallyeis ('Prima pars Promptuarii Iconum insigniorum a soeculo hominum', 1555).

#### Appendix IV: The 'Crookston dollar' myth

The Type II – Regular issue ryals have been known in popular parlance as 'Crookston dollars' for at least two centuries, although the origins of the association between the coin and an ancient yew tree that grew in the grounds of Crookston Castle can be traced back to the closing years of the seventeenth century.<sup>71</sup> The basis for this connection has been a belief that Mary and Darnley initiated their courtship beneath the yew, and that the coin served as a memento and celebration of their union. The legend has been refuted by several authors on a number of counts and in succeeding epochs, a major stumbling block to the romance being the fact that the original ordinance for the minting of ryals stated that the arboreal emblem was a palm tree. A detailed discussion refuting the validity of a connection between the coin and the Crookston estates has been provided in a nineteenth century monograph by David Semple.<sup>72</sup> Despite this and other critiques, the term 'Crookston dollar' has retained its popularity to the present day. An account of its evolution, history and longevity has been published,<sup>73</sup> but may be conveniently summarised below.

In the eighteenth century, very obvious connections had been made between the coin and the Crookston estate. In his poem *The Clyde*, John Wilson (1720-1789) refers to the Crookston yew thus:

Embossed in silver, now its branches green Transcend the myrtle of the Paphian queen

A visual portrayal of the presumed connection was afforded by an engraving made by Robert Paul in 1763 from a sketch by Charles Cordiner and published by Foulis, which included the yew tree in the foreground of the castle and an image of the reverse of a ryal appended beneath the main scene.<sup>74</sup>

Sir Walter Scott's influence on Scottish folklore cannot be overestimated. In his novel, *The Abbot*, he depicts Mary, Queen of Scots, within the grounds of Crookston eulogising over her associations with the ancient yew under whose canopy her tryst with Darnley was supposed to have been initiated. Despite this figment of historical fiction having no possible basis in fact, the appeal of a tangible link to the romance and tragedy of Mary's life has possibly attached to the coin a certain talismanic significance. Scott's antiquarian interests included coins,<sup>75</sup> and he was certainly familiar with the silver ryal,

<sup>71</sup> Dr John Sharpe's, *Observations of the Scots Money*, written in the last years of the seventeenth century but not published until 1785, had noted that the "yew-tree in the park... of the Earl of Lenox... gave occasion to the impress of the coin...".

<sup>72</sup> Semple 1876.

<sup>73</sup> Rampling 2011(2012).

<sup>74</sup> Ibid. 84-85.

<sup>75</sup> In his autobiography, James Nasmyth (1808-1890), the famous Scottish Engineer, included the following

having requested of a friend, that 'the Crookston dollar, if to be had' be incorporated into the base of a quaich so as to 'show the reverse as well as obverse of the coin'.<sup>76</sup>

Numismatists are amongst those who have obscured rather than clarified the issue. The eighteenth century author of *Numismata Scotiae*, Adam de Cardonnel, declared that 'the famous yew tree of Cruickstone ... is made the reverse of this new coin'.<sup>77</sup>

John Lindsay in his *A View of the Coinage of Scotland* (1845) perpetuated the myth, and James Wingate in his *Illustrations of the Coinage of Scotland* (1868) affirmed that the Mary ryals were called 'Crookston dollars', and even used the term to label his illustrations of the coins. He inferred that the name derived from the estate of Crookston having belonged to Lord Darnley, a suggestion repeated in *A Handbook to the Coinage of Scotland* by J. D. Robertson (1878). This latter author also affirmed the emblem to be 'a crowned yew-tree', a belief that still finds expression in some more recent publications.<sup>78</sup>

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delightful childhood memory: I remember one day, when sitting beside my father making a very careful drawing of a fine bronze coin of Augustus, that Sir Walter Scott entered the room...At his request I had the pleasure of showing him my little store of coin treasures, after which he took out of his waistcoat pocket a beautiful silver coin of the reign of Mary, Queen of Scots, and gave it to me as being his "young brother antiquarian." I shall never forget the kind fatherly way in which he presented it...it vastly enriched my little collection of coins and medals. (James Naysmyth, Engineer: An Autobiography, Samuel Smiles [Ed.], John Murray, London, 1883, pp. 87-88)

<sup>76</sup> Rampling 2011(2012), 88-89.

<sup>77</sup> Cardonnel 1786, 18-19, footnote.

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David Rampling is a Fellow of the Numismatic Society of South Australia, a member of the British Numismatic Society, a Fellow of the Royal Numismatic Society and a Fellow of the Society of Antiquaries of Scotland. He is now retired from professional life as a Consultant Psychiatrist.



52

711 712



RYALS





D1

RYALS



66

73

TWO-THIRDS RYALS









C1







TWO-THIRDS RYALS









ONE-THIRD RYALS

Plate 3

## **Ray Jewell Award Recipients**

#### Silver Medal (for services to the NAA)

Raymond T N Jewell (posthumously), 1998 John Hope, 2003 W James Noble, 2004 John R Melville-Jones, 2011 Leslie J Carlisle, 2011 Walter R Bloom, 2013 Peter D Lane, 2015

#### Bronze Medal (for best article from two journals)

John Sharples. Vol 7, *Catalogue of Victorian trade tokens*.
Paul M Holland. Vol 9, *Master die types of Australian halfpennies*.
Peter Lane and Peter Fleig. Vol 12, *London private museums and their tokens*.
Richard A J O'Hair and Antoinette Tordesillas. Vol 13, *Aristocrats of crime*.
Peter Lane and Peter Fleig. Vol. 15 *William Henshall*.
Christopher Addams. Vol 18, *Counterfeiting on the Bermuda convict hulk* Dromedary.
Mark Stocker. Vol. 19, *The Empire Strikes Back*.
Helen Walpole. Vol 22, *The role of sporting medals in a sports museum*.
Peter Lane. Vol 23, *S. Schlank & Co Ltd: medal and badge makers of Adelaide 1887-1971*.

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1977, R T N (Ray) Jewell, Australia

#### **Bronze Award**

1.	1977, J Gartner	Vic	23.	1994, L P McCarthy	Qld
2.	1977, W J Mira	NSW	24.	1995, F S Seymour	SA
3.	1977, R M Greig	SA	25.	1996, J Chapman	Vic
4.	1977, R V McNeice	Tas	26.	1997, S McAskill	WA
5.	1977, G D Dean	Qld	27.	2001, D Junge	Vic
6.	1977, S J Wilson	WA	28.	2001, F Dobbins	NSW
7.	(Allocated as the silver award to Ray	Jewell)	29.	2001, G Farringdon-Davis	Vic
8.	1978, O C Fleming	NSW	30.	2003, P Lane	SA
9.	1978, M B Keain	SA	31.	2004, F Gare	WA
10.	1979, T M Hanley	NSW	32.	2006, M C Williams	Qld
11.	1979, A Ware	NSW	33.	2006, J A Hanley	NSW
12.	1981, C J Tindall	SA	34.	2007, G Shea	Qld
13.	1983, D G Sandeson	Qld	35.	2007, W R Bloom	WA
14.	1984, R L Henderson	Vic	36.	2008, R Sell	NSW
15.	1985, L J Carlisle	NSW	37.	2008, G D Snelgrove	Qld
16.	1986, H Powell	WA	38.	2009, M P Vort-Ronald	SA
17.	1987, N Harper	Tas	39.	2010, J W Cook	Qld
18.	1989, T W Holmes	Tas	40.	2011, P Fleig	SA
19.	1990, D G Stevens	Qld	41.	2013, B V Begley	Qld
20.	1991, L T Pepperell	Vic	42.	2014, S Appleton	Qld
21.	1991, C Heath	Tas	43.	2015, T J Davidson	Qld
22.	1993, C E Pitchfork	NSW	44.	2016, F J Robinson	Vic





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