

DIES AND DESIGNS: THE ENGLISH GOLD COINAGE 1465–1485. Part 1

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THE coinage of Edward IV was examined and arranged forty years ago in a masterly series of papers by Mr C. E. Blunt and the late Mr Whitton to which, even now, it is almost impossible to add.¹ It is a coinage of immense complexity and in those papers the writers set out not only an enduring chronological classification of the coinage as a whole but also a convincing arrangement of the myriad of varieties found within each type. The purpose of this paper is to examine a small section of this series and to explore, in terms of its practical significance to the mint at the time, the issue of coins bearing such a variety of initial marks, stops, broken letter punches, fleuring, spelling errors and symbols in the field.

TABLE I

London mint 1465–85: surviving coins per die

No. of coins	Ryals			Edward IV ½ Ryals			¼ Ryals			Henry VI Angels			Edward IV Angels			½ Angels			Richard III Angels		
	O	R	C	O	R	C	O	R	C	O	R	C	O	R	C	O	R	C	O	R	C
1	24	92	136	13	20	24	7	20	27	3	2	13	15	62	156	—	11	14	1	5	36
2	10	29	29	5	12	10	5	8	10	2	3	13	17	39	29	1	5	4	—	6	8
3	12	13	9	4			6	5	3	1	5	6	15	15	11	—	3	3	2	6	7
4	4	6	1	1			1	4	4	—	4	2	8	10	2	1	2	2	1	4	3
5	5	3	1	1			—	1		—	1	1	5	5	2	1	2	2	1	4	—
6	4	1					—			—	4	—	8	—		1	—	—	2	1	2
7	3						1			1	—	—	3	1		—	—	—	3	—	
8	2						—			1	—	1	1	1		—	1	—	—	1	
9	1						1			1	—		1		3			1	—	—	
10	—						—			—	1		1			—			1	—	
11	1						—			—			—			—			—	1	
12	1						—			—			—			—			—		
13	—						—			1			—		1				—		
14	—						—			—			—						—		
15	—						—			1			—						1		
16	1						1	(17)		1			1	(1-8)					1	(23)	
& over																					
	68	144	176	24	32	34	22	38	44	12	20	36	75	133	200	8	24	26	13	28	56
Coins	230			44			72			78			265			57			97		
% output known dies/ combinations	90	60	41	70	55	45	90	72	62	96	97	83	94	76	41	100	79	76	99	95	63

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and Son Ltd. (Douglas Liddell) who have allowed me to examine and photograph coins in their stock. Messrs Christie, Manson & Woods Ltd. (Lisa Norfolk), Glendining & Co. (Chris Webb) and Sotheby's (James Morton) have generously provided me with backnumbers of their illustrated sale catalogues. I am particularly grateful to Mr Herbert Schneider and other private collectors who have allowed me to examine coins in their possession.

¹ C.E. Blunt and C.A. Whitton, 'The coinage of Edward IV and Henry VI restored', *BNJ* 25 (1945–48), 4–59, 130–182, 291–339 (hereafter abbreviated B & W).

Until recently, the theory of privy marking developed by L.A. Lawrence and G.C. Brooke² around the three monthly trial of the pyx was available to numismatists to account for many of the varieties found on the mediaeval coinage. Mr Blunt³ has now shown that the indentures do not require a quarterly change of privy mark and that there was no requirement on the master that he should change his identifying mark at each pyx trial. From the reign of Edward IV this mark was the initial mark and to assign significance to other marks we must look, if anywhere, to the internal control requirements of the mint.

Unfortunately, we have very little documentary evidence for the internal administrative practice in the mint in the late fifteenth century.⁴ No evidence survives to suggest, for instance, that coins struck by a given moneyer were to be marked and identified from those struck by his peers. This may not be accidental and the pattern of die production and use revealed by the coins themselves weighs against assigning practical control significance to varieties below the level of the initial mark.

Table 1, which is constructed on the same lines as Mr Lyon's table in *The Lincoln Mint*,⁵ shows the number of obverse dies, reverse dies and die combinations known to me from respectively one, two or more coins. At the bottom of the table is the estimated percentage of total output struck from the known dies or die combinations. The main types within each denomination have been amalgamated but this has probably resulted only in a slight overstatement of the percentage of known London ryal dies. Table 1 reveals that, with the exception of the half-ryals – a denomination with a low survival rate – the 1,100 coins studied have produced a very significant proportion of the obverse dies originally used to strike the gold coinage and a respectable sample of the reverse dies.

Before taking these figures at face value, it is important to show that the main assumption on which they are based – that each coin struck has an equal chance of surviving and being included in the sample – is a reasonable one, and that a significant number of survivors does not derive from an unrepresentative early hoard.

In practice, very few late-fifteenth-century gold hoards are recorded. In his list of hoards deposited in England and Wales up to 1513, Mr Mayhew⁶ lists only one containing more than half a dozen gold coins – a parcel of thirty-five ryals of unknown origin which passed through the hands of Messrs Spink & Son in 1899. Another hoard containing at least twenty half-ryals, angels and half-angels and deposited around 1500 has recently been published,⁷ but it is not until the St Albans hoard deposited in 1523⁸ that a substantial body of material comes to light. It is evident that the ryal, as well as the angel, continued to circulate for many years, for ten coins were found in the Angers hoard⁹ deposited as late as 1560.

The coins studied are weighted towards the rare types. The sample includes a high proportion of all the known angels of Henry VI and Richard III but probably no more than a quarter of the surviving London ryals. These groups are self contained and the only significant error is an under-recording of the very prolific and uniform Type XXI angels of Edward IV.

Three features stand out from Table 1. The first is the very unequal output per die. This

² G.C. Brooke, *English Coins from the Seventh Century to the Present Day* (1932), pp. 126–28.

³ C.E. Blunt, 'Privy-marking and the trial of the pyx', in *Studies in Numismatic Method presented to Philip Grierson*, edited by C.N.L. Brooke, Ian Stewart, J.G. Pollard and T.R. Volk (Cambridge, 1983), pp. 225–30.

⁴ H. Symonds, 'Mint accounts and documents of Edward IV', *NC* (1926), 107–8.

⁵ C.S.S. Lyon, 'Analysis of the material', in *The Lincoln Mint* by H.R. Mossop & others (Newcastle, 1970), pp. 15–17 and table 4.

⁶ N.J. Mayhew, 'The monetary background to the Yorkist recoinage of 1464–1471', *BNJ* 44 (1974), 65–66.

⁷ M.M. Archibald, 'A 15th-century English gold hoard from an unknown site', *CH* 3 (1977), 313; also *CH* 5 (1979), 291.

⁸ Sir John Evans, 'A hoard of English gold coins found at Park Street, near St. Albans', *NC* 3rd ser. 6 (1886), 173–203.

⁹ H. Schneider, 'The significance of the archaeological evidence in a review of a French hoard of English gold coins', *BNJ* 37 (1968), 74–84.

occurs in other series.¹⁰ The usual pattern is for one or two obverse dies to have an exceptionally long life. This is particularly noticeable under Richard III where one angel obverse die accounts for almost a quarter of the total output and accounts for many of the remote die links found in that issue.¹¹

The second feature is the varying ratio of obverse to reverse dies employed for the different denominations. The angels were struck on a very stable ratio of 1:2, which varies only when an issue terminates suddenly. The ryals were almost certainly struck on a ratio of 1:3 though for a short period it went as high as 1:5, while the ratio for the half-angels of Edward IV is probably 1:4.

The third and most significant feature is the discrepancy between the number of reverse dies and the number of die combinations. This reflects how far reverse dies travel between different obverses. The more dies travel, the more difficult is it to envisage a system of mint control which tied a group of reverse dies to a corresponding group of obverses. The half-angels were struck from a single current obverse die, but the angels tend towards two die-combinations per reverse die and those of Richard III tend towards three.

The new ryal coinage of Edward IV was introduced under the indenture of 6 March 1465 between the king and Lord Hastings which provided for a 'new noble' of 10s. weighing 120 grains and its fractions, together with an angel of 80 grains and its half.¹² There is no early prototype coin which can be identified as the first ryal. Unlike some denominations, which show a period of evolution before a substantive design evolved, the ryal 'hit the ground running' and is remarkably uniform in type until just before the close of the first reign.

The ryal's most striking features are the splendored Yorkist rose and the king's banner, but the most innovative is the omission from the field of those symbols, quatrefoils or trefoils, found on the contemporary groats. The Type I (plate 1, no. 1) noble is clearly marked by the lis at the shield and the pellets by the king's crown but there is no corresponding identification on the ryal (plate 1, no. 3). Classification is not made easier by the absence of an initial mark on all but six of the sixty-eight recorded London obverse dies and it is possible that this anonymity was deliberate.

The lettering¹³ found on almost all the ryals is that of the groat fount. This evolves sufficiently as old letter punches, particularly the R and the A, are replaced to enable a fairly accurate relative chronology for the production of the dies. It is unlikely that this was a contemporary means of identification for there is no wholesale replacement of the groat fount during the first reign and while the replacement of individual letters sometimes coincides with a change of type, more often they do not. The half-groat fount, which appears occasionally on every denomination evolves independently.

The initial mark on the reverse of the ryal is that found on the obverse of the corresponding groat. Where the latter does not change on the introduction of a new type, the ryals are classified by the form of the fleurs or trefoils in the spandrels.

The ryal was introduced shortly before the end of Type V and this has given rise to the abnormal die ratio of nine obverse dies to seven reverse dies in the first type. With the exception of die 6 which has initial mark rose, it is not easy to identify dies 1-9 and it is not certain whether they were all cut at one time. At least seven were in use concurrently for they are found with reverses of later types. Two dies survived into Type VII and one, die 4 (plate 1, nos 4-8), as late as Type VIII.

The lettering on obverse dies 1-17 is from the normal groat fount with the exception of dies 10 (plate 1, no 9) and 11 which have an abnormal letter A, very similar, though not identical to, that found on the nobles. These dies show another unusual feature, a combed

¹⁰ H. Schneider, 'The hammered gold coins of Charles II', *BNJ* 36 (1967), 124-47. I am greatly indebted to this seminal paper for many ideas on the importance of die-ratios and output per die.

¹¹ E.J. Winstanley, 'The angels and groats of Richard III', *BNJ* 24 (1944), pl. 1, no.9.

¹² B & W, p. 9.

¹³ B & W, pp. 21-26.

bowsprit, and but for initial mark sun it would be very tempting to regard them as the first ryals. They are possibly equivalent to the unique old style quarter-ryal.¹⁴

The large number of obverse dies carried forward partly explains the low number of new dies cut for use in Type VI – eight new obverse dies to thirty-six new reverses. There is, however, evidence that obverse dies of this type were used well beyond their normal capacity, a feature found in other recoinages.¹⁵

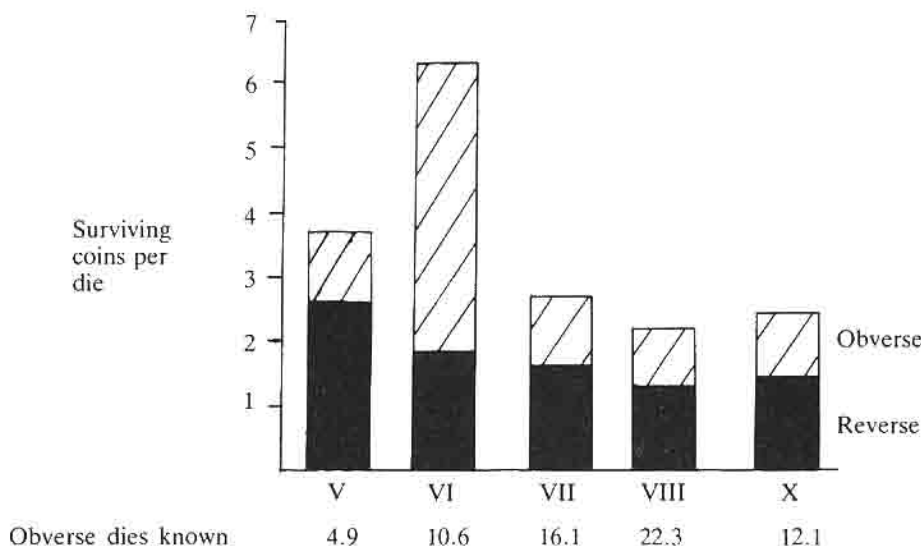


FIG. 1. Edward IV London ryals: survival rates

In Figure 1 obverse dies known have been apportioned over the reverse types with which they are found. The number of coins per surviving reverse die range from 1.6 to 1.9 (Type V is based on too small a sample to be significant) but the number per obverse die of Type VI is exceptionally high.

It is not clear why obverse dies 2 and 4 were not brought into use during this period. In later types many more obverse dies were cut culminating in twenty-two for the notionally scarce Type VIII. It has been suggested¹⁶ that coin dies might have been taken out of service for repair but there is no evidence that any ryal dies were recut for cosmetic reasons.

The ryals do show considerable variety in two minor aspects of the design – the spelling of the legend and the arrangement of the stops. Legend varieties occur predominantly on the reverse (Table 3), usually as a misspelling of the longest words e.g. TRANANCIENS and EDIUM. Despite the variety, only a few dies show errors and there is no coherent pattern. The last series to produce a comparable batch of errors was the pinecone-mascle coinage of Henry VI in which four misspellings of TRANSIENS¹⁷ include two not given below. The errors are all cases of omission or repetition and it appears that when an error was noticed in time to be corrected the legend was recut. Four dies are known reading TRANSIES (plate 1, no. 10) but at least three others read TRANSIENS with the second N cut over an S (plate 1, no. 11).

¹⁴ B & W, Type VI/V, pl.IX, 8.

¹⁵ B.H.I.H. Stewart, 'Medieval die-output: two calculations for English mints in the fourteenth century', *NC* (1963), 105.

¹⁶ Schneider, 'The hammered gold coins of Charles II', pp. 143–44.

¹⁷ C.A. Whitton, 'The heavy coinage of Henry VI', *BNJ* 23 (1938–40), 229.

TABLE 3
Edward IV ryals: reverse legend errors

Error	V	VI	London VII	VIII	X	Bristol	Coventry	Norwich	York
1 TRANSIEN			2						
2 TRANSIE S			2	2					
3 TRANS ENS							1		
4 TRAN IENS				1					
5 TRA SIENS			1						
6 TRANSIENE			1						
7 TRANNIENS		1							
8 TRRANSIENS						1			
9 TRANANSIENS			3						
10 MEDIU				1					
11 MED UM					3				
12 ME IUM						1			
13 M DIUM			1						
14 EDIUM				1					
15 MEDIUM					1				
16 ILLOR M				1					
17 ILLO UM				1					
Error dies:	—	1	10	7	4	2	1	—	—
Known dies:	7	36	40	39	21	25	7	6	13

A comparable error is the occasional omission of one or more fleur or trefoils from the spandrels (plate 1, no.12). This is unusual and found on only seven¹⁸ of the 144 recorded London ryal reverse dies. Two London half-ryal dies omit the trefoils in all the spandrels (plate 1, no.13). These dies are interesting for they are identical. Idiosyncratic features often appear on several identical dies¹⁹ and it is possible that they represent the output of one die-cutting session in which the same mistake was repeated on each die not deliberately but as a 'mechanical' error. In Table 4 the reverse dies of Type VI are set out in punctuation order. Thirty-six dies are recorded yielding thirty-five different combinations of stops. The stops are, with very few exceptions, trefoils or double trefoils but they are often partially omitted. In contrast to the annulet nobles of Henry VI,²⁰ which bear stops of monotonous uniformity, ryal dies can almost be identified by their stops alone. Are the dies deliberately marked? In Table 5 and Figure 2, half of all possible locations contain a single trefoil stop, 30 per cent contain no stop and the rest are usually double trefoils (several dies of Type VII have a crescent after AUT and one die only of Type VIII a double saltire after TRANSIENS). The three normal stops can be arranged in 2,916 possible combinations.

A mint official intent on marking his dies might be expected to build up a system of coded stops and, if not to restart it on each new type, at least to continue to develop it. There is no evidence of such a system. The combinations vary randomly within each type and the 144 London reverse dies yield 102 different arrangements. The only trend is towards simplification. The percentage of double trefoil stops declines and by Type X they have virtually disappeared leaving only fifteen different combinations from twenty-one dies.

¹⁸ Type VI two out of thirty-six dies; Type XII two out of forty; Type X three out of twenty-one.

¹⁹ Two extraordinary Type VII quarter-ryal reverse dies read EX (trefoil) ALTABITUTUR IN GLOR and have one lis

missing from the cross-end at 3 o'clock, B & W VII.2 & 16. They are identical.

²⁰ Whitton, pp. 79-81.

TABLE 4
London ryal Type VI: known reverse legends

									Die
1	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	28 (see Table 2)
2	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	15
3	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	33
4	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	26
5	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	35
6	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	36
7	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	IBAT		38
8	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	32
9	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	2
10	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	7
11	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	37
12	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	31
13	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	9
14	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	IBAT		20
15	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	IBAT		13
16	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	1
17	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	29
18	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	17
19	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	HIBAT		18
20	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	24
21	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	11
22	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	10
23	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	5
24	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	4 & 34
25	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	HI	BAT	19
26	IHC	AUT	TRANSIENS	PER	MEDIUM	I	LLORUM	IBAT	23
27	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	IBAT		21
28	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BA	16
29	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	IBAT		25
30	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORU	I	BAT	14
31	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	IBAT		22
32	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	6
33	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	8
34	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	3
35	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT	12 (punctuation uncertain)

It is possible that the stops on the ryals were punched into the die after the legend had been completed. Where the words are well spaced, the trefoils are often punched in robustly to give a large, spread stop but sometimes the stop is very lightly impressed in the die. Although from the same punch, this gives a much smaller, weaker trefoil and is found where there is little space between the words or it has been necessary, for this reason, to place the stop almost on the outer circle. Type VI, die 23 (plate 1, no. 14) shows large stops after TRANSIENS but weak ones after PER and again after MEDIUM. Such a process would generate random stops and could account for occasional error, a trefoil after the I of ILLORUM or after the E of MEDIUM, found on the coins.

Type VIII is important for it introduces at the London mint the practice of combining initial marks – a crown on the obverse and a sun on the reverse. On the gold this creates a problem for, with the exception of the quarter-ryal, there is no obverse initial mark. The

TABLE 5
Edward IV London ryals: reverse stops

	IHC	AUT	TRANSIENS	PER	MEDIUM	ILLORUM	I	BAT
No stop	x	x	x	x	x	x	x	x
Trefoil	x	x	x	x	x	x	x	x
Double Trefoil			x	x	x	x	x	x
Crescent		x						
Double Saltire			x					
Quatrefoil							x	x

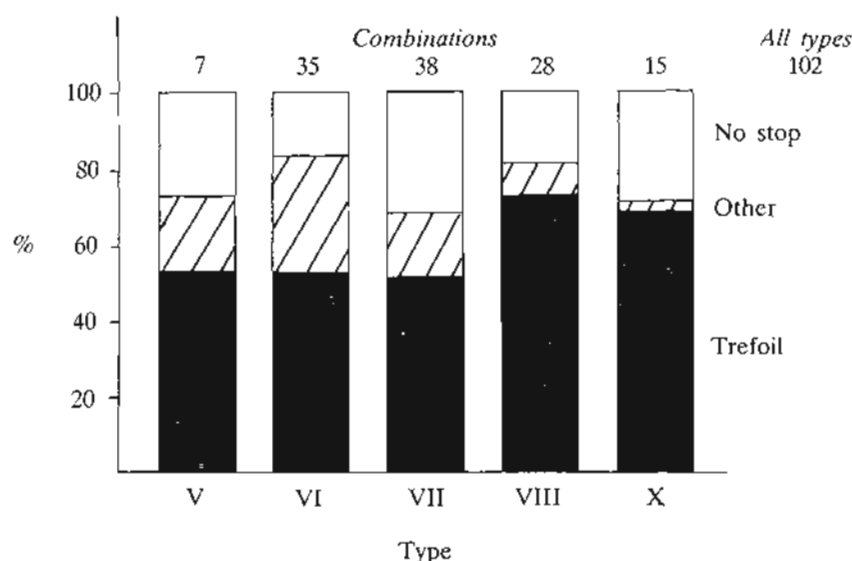
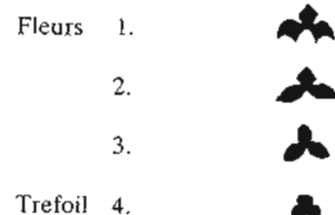


FIG. 2. Edward IV London ryals: reverse stops

TABLE 6
The classification of Edward IV's ryals

<i>Groats</i>				
<i>On cusps</i>	VI	VII	VIII ^a	X
Fleurs	1	2 & 3	3	
Trefoils		4	4	4
<i>Ryals</i>				
<i>In spandrels</i>	VI	VII	VIII	X
Fleurs	1	2 & 3		
Trefoils			4	4
<i>Half-Ryals</i>				
<i>In spandrels</i>	VI	VII	VIII	X
Trefoils	4	4	4	4

^a Groats of Type VIII all have a quartrefoil on the breast



classification by means of fleurs or trefoils in the reverse spandrels is satisfactory for all practical applications since the fleur punch on the ryals is the same as that used on the cusps of the groats and changes accordingly. However, the change does not occur precisely with the initial mark but slightly before the end of Type VII²¹ and is of little assistance with the half-ryals which show trefoils throughout. There may be some other feature introduced by the mint for the purpose of identifying Types VII and VIII.

Four reverse dies, one for each London gold denomination and one for the York half-ryal, have an initial mark sun on the crown (plate 1, no.16). This was found to be unsatisfactory and was not repeated. A quatrefoil, corresponding to the mark on the groats, appears only tentatively in the legend of a few ryals and it is fortunate that a new letter A, the tall indented A.2b (see Appendix 4), introduced just after the beginning of Type VIII enables the dies to be arranged.

Table 7 gives the probable order in which the obverse dies 26-42 were cut and the reverse types with which they are found. Dies 4 and 18 were old dies still in use.

TABLE 7
Edward IV London ryals: obverse dies

Die		Type						
		R	A	.	V	VI	VII	VIII
4.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	3	2a		X		X	X
18.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B' . ^a	3	2a	.		X	X	X
26.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a				X	
27.	ED / WARD' DI GRA' REX ANGL' Z FRANCIE' / DNS' I B'	4	2a				X	
28.	ED / WARD' DI GRA' REX ANGL' Z FRAN' / C DNS' I B'	4	2a				X	
29.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a				X	X
30.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a				X	X
31.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B' ✱	4	2a				X	X
32.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' IB'	4	2a				X	X
33.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a				X	X
34.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a					X
35.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' IB'	4	2a					X
36.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a	.				X
37.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a	.				X
38.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' IB'	4	2a	.				X
39.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' IB'	4	2a	.				X
40.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2a	.				X
41.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' IB'	4	2b					X
42.	ED / WARD' DI GRA' REX ANGL' Z FRANC' / DNS' I B'	4	2b					X

(etc.)

^a pellet added below shield when used to strike Type VIII (B)

At least seven old obverse dies were brought forward on the introduction of Type VIII. Most of these had been extensively used in Type VII and can have had little life left. No attempt was made to scrap them or, with one exception, to mark them as belonging to the new type. The exception is die 18 (plate 1, no.17) which is found with a pellet added below the shield (plate 1, no.18) in combination with the unique sun over crown reverse die. Only

²¹ London groats, B & W Types VII.6.

one specimen has survived of the altered die so it is not known when the pellet was added. Nevertheless, it was clearly deliberate for, after a batch of two dies with a crescent stop after REX (a stop otherwise only known after AUT on many reverse dies of Type VI) a series of at least five new dies was cut showing the same pellet below the shield. In the die charts, these replace the old obverse dies brought forward from Type VII and the last one, die 40 (plate 1, no.19), was cut just after the introduction of A.2b. The pellet then lapses and is not found on the remaining eleven obverse dies cut during the currency of Type VIII.

This transition is a curiously haphazard business. The old obverse dies were allowed to wear out and although initially new dies were marked, this practice soon lapsed. The lettering may have been taken into account for there are three half-ryal reverse dies with A.2b,²² but it would have been more logical to introduce a new letter on the change of type. The transition between Type VII and Type VIII does not appear to have been very important to the mint.

Ironically the only real change in the design of the ryal comes when it is least required – at the end of Type X. A few Type X ryals have the small lettering of the half-groat found on the obverse and read DEI instead of DI.²³ Slightly earlier they also change from a five-line

TABLE 8
Henry VI restored angels: London mint

OBVERSE DIES

A	HENRIC' . DI	GRA' . REX . ANGL' . Z . FRANC	Letter A.3	Batch 1
B	HENRIC' . DI	GRA' . REX . ANGL' . Z . FRANC	"	
C	HENRICUS . DI	GRA' . REX . ANGL' . Z . FRANCIE	Letter A.3a	
D	HENRICUS . DI	GRA' . REX . ANGL' . Z . FRANCIE	"	Batch 2
E	HENRICUS . DI	GRA' . REX . ANGL' . Z . FRANC	"	
F	HENRICUS . DI	GRA' . REX . ANGL' . Z . FRANC	"	
I	✦ HENRICU' . DEI	GRA' . REX . ANGL' . Z . FRANC	Letter A.3b	Batch 3
J	✦ HENRICU' . DI	GRA' . REX . ANGL' . Z . FRANC	"	
K	✦ HENRICU' . DEI	GRA' . REX . ANGL' . Z . FRANC	"	
L	✦ HENRICU' . DI	GRA' . REX . ANGL' . Z . FRANC	"	

REVERSE DIES

a	✦ PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDEM'TOR	Letter A.3a	Batch 1
b	✦ PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	
c	✦ PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	
d	✦ PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	Batch 2
e	✦ PER / . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'T	"	
f	✦ PER / . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'T	"	
g	✦ PER / . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'T	"	Batch 3
h	✦ PER / . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'T	"	
i	PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	
j	PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	Batch 4
k	PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	
l	PER . CRUSE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	
o	PER . CR/USCE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	Batch 4
p	PER . CR/USCE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	
q	PER . CR/USCE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	Letter A.3b	
r	PER . CR/USCE'	TUA' . SALUA . NOS . XPC' . REDE'TO'	"	
s	PER . CR/USCE'	TUA' . SALUA . NOS . XPC' . REDE'TOR	"	

²² Before the identification of this letter the types were indistinguishable, B & W, p.150.

²³ B & W Type X var. 1.

to a four-line ship and subsequently from three ropes at the stern to two. The latter (plate 1, no.20) are almost certainly the last ryals.

Edward IV's first-reign angels are well known.²⁴ Only eight specimens survive struck from four obverse (plate 2, nos 1–4) and three reverse (plate 2, nos 6–8) dies.²⁵ The design tends to simplify as it evolves. The head of the dragon evolves from a fierce, hand-engraved form to a small, neat variety which appears to be from a regular puncheon. This is not the puncheon used for the angels of Henry VI, though it is very similar and given the low survival rate of these coins there may well be more varieties of the first-reign angel yet to come to light.

Allen²⁶ pointed out that the angels of Henry VI use, where possible, the same puncheons as were employed for the half-ryals of Edward IV (plate 2, no.5), notably the prow and the poop of the ship. This is also true of the first-reign angels and the early reverse dies adapt the large rose found on the half-ryal for use by the mast. This frugal use of puncheons occurs quite frequently, not always with aesthetically pleasing results.

The angels struck during Henry VI's restoration were examined in detail by Allen²⁷ and are the only series covered in this paper which have been subject to a previous die-study. Only four new dies have appeared since 1937: L, m', s and Bristol d and, from the low incidence of singletons, very few dies remain unrecorded. We can now record, however, almost twice as many individual coins and a considerable number of additional die-links which encourage me to update and review the gold coinage.

The London angels fall into four groups. Obverse dies A and B employ the groat fount found on the ryals and Allen²⁸ placed them first in the series for this reason. Dies C and D employ the half-groat fount, now invariably on the angels, and have no initial mark and the reading FRANCIE. Dies E and F have the initial mark restoration cross at the end of the legend. Dies I, J, K and new die L form a group reading HENRICU with the initial mark in its normal position. The last group is also distinguished by the introduction of a new letter A, A.3a, with indented feet (see Appendix 4). This letter reappears in the first angels of Edward IV Type XII and not only justifies the position of this group at the end of the restoration but also explains why so few specimens survive.

The reverse dies fall into similar groups and were also described and placed in order by Allen. Dies a–d have initial mark cross pattee. Dies e–f show initial mark restoration cross, read REDET and have the letter H by the cross from the half-groat fount. Dies i–l have the initial mark at the end of the legend, read REDETOR, and use the letter H from the larger groat fount. Dies n–r and new die s omit the initial mark.

Allen adopted this thematic arrangement partly because it seemed to fit the pattern of die links, but also because he was compelled to abandon his attempt to force the initial marks into a three-monthly pattern – there are not only too many initial marks but the combinations found on the gold contradict those of the silver.

Figure 3, which shows the combinations now known, has been divided by vertical lines into the four groups. Although every angel die is different the similarities within each group greatly outweigh the differences – obverse die B is identical to die A except for a trefoil after GRA while reverse die i omits only the trefoil after XPC – and Allen's grouping of the dies into batches is, in all probability, the way they were actually cut.

²⁴ C.E. Blunt, 'Some notes on the coinage of Edward IV between 1461 and 1470 with particular reference to the nobles and angels', *BNJ* 22 (1937), 193–99; and H. Schneider, 'An unpublished angel of Edward IV', *BNJ* 26 (1950), 221.

²⁵ For ease of reference, every angel die known to me up to Edward IV, Type XIX has been illustrated in plates 2–7.

The die numbers are given in the key to the plates and referred, where applicable, to Table 8 and Appendices 1 and 2.

²⁶ D.F. Allen, 'The coinage of Henry VI restored: notes on the London mint', *NC* (1937), 28–59.

²⁷ Allen.

²⁸ Allen, pp. 35–36.

LONDON

I.m.

Coins

Obv.

Rev.

Coins

I.m.

CP

RC

-RC

-

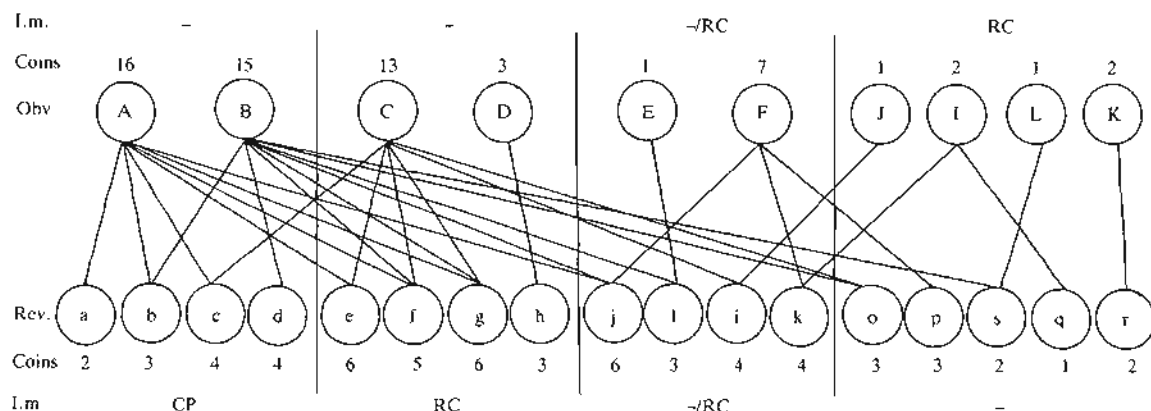


FIG. 3. Henry VI restored 1470-71: angel die-links

Figure 3 can be greatly simplified if the batches of dies are treated as groups rather than as individual dies.

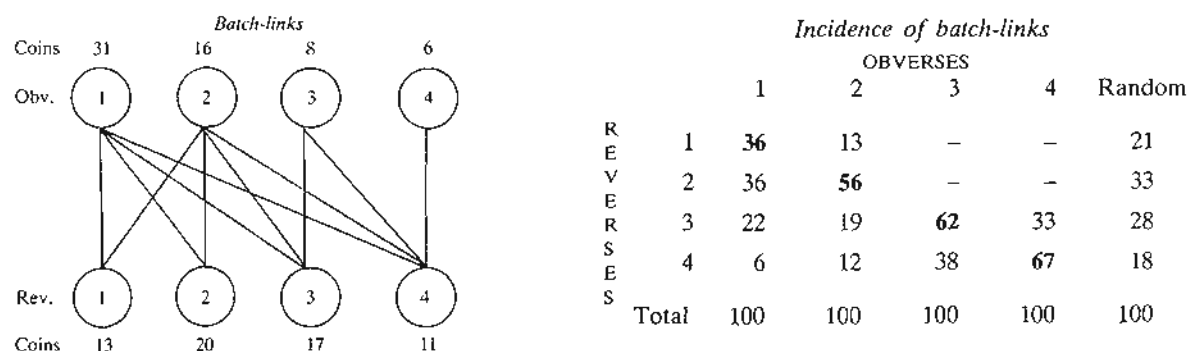


FIG. 4. Henry VI restored angels: London die batches

In Figure 4, on the left, is a batch-link diagram of the four obverse and reverse die groups. The dies of obverse batch one were cut first in the chronological sequence, as were those of reverse batch one.²⁹ These were used together until the second batch of dies was cut and introduced into the general stock. Two-way muling now occurred between the first two batches though the reverses of batch one soon wore out. When the dies of batch three were cut and added to the die stock, the obverses of batch one, being longer lived than the reverses, were still in use and are found combined with batch three reverses. This sets up a pattern of drifting dies which continues until, for whatever reason, the existing stock of dies was scrapped and a completely new set cut.

The box on the right in Figure 4 shows this process in action. If obverse and reverse dies were combined on a completely random basis and given the known number of surviving coins from each reverse batch, an obverse die would have a 21 per cent chance of being

²⁹ For the evidence that the supply of dies by the dozen, consisting of four obverses and eight reverses, was normal

for the silver coinage, see *SCBI* 23 Oxford, *Coins of Henry VII*, p. x.

combined with a reverse of batch one, a 33 per cent chance of being combined with a reverse of batch two, etc. If the actual percentage shown in the diagram is higher than this figure there is a better than random match between the obverse and reverse batches concerned. Obverse dies of batch one have almost twice the average chance of being combined with reverses of batch one: 36 per cent against 21 per cent, an average chance of being combined with batch two, and a sharply declining expectation of being combined with batches three and four. Once a batch of dies has been cut each die takes its chances in the general pool regardless of what 'privy' markings it may bear.³⁰ This process is again at work in the second-reign angel dies of Edward IV.

Table 1 has shown that the percentage of original die combinations known from surviving coins is far lower than the percentage of original dies. New die combinations continue to turn up long after new dies have ceased to appear, until the absence of die-links becomes more significant than their existence. The attribution of those coins bearing the lis mark has not yet been satisfactorily resolved during this period.³¹ The half-ryals of Edward IV with lis in the waves and the quarter-ryals with lis initial mark do not die-link into the main series but insufficient coins survive to make this conclusive. It is another matter in the case of the Henry VI angels. This 'lis group', obverse dies G and H, reverses m, m', and n form a tightly linked series of no less than seventeen coins and it does appear extremely unlikely that if they were struck at London they would not, by now, die-link to the main series.

TABLE 9
Henry VI restored: 'Lis group' and Bristol angels

Obverses

Lis group	
G	HENRICUS × DEI × GRA' × REX ANGL' × Z × FRANC ✦
H	△ HENRIC' △ DEI △ GRA' △ REX △ ANGL' △ Z △ FRANCIE ✦
Bristol	
A	△ HENRICUS △ DEI △ GRA △ REX △ ANGL' △ Z △ FRANC △ ✦
B	△ HENRICU' △ DI △ GRA' △ REX △ ANGL' △ Z △ FRANC △ DNS ✦

Reverses

Lis group	
m	✦ PER CRU/C TUA' SALUA' NO' XPC' REDEM TOR
m'	PER CRU/C TUA' SALUA' NOS XPC' REDEM TOR ✦
n	PER CR/UC' TUA' SALUA' NOS XPC' REDEMTOR △
Bristol	
a	✦ PER/△ CRUSE' TUA' SALUA' NOS XPC' REDET'
b	✦ PER / CRUSE' TUA' SALUA' NOS XPC' RED'EMT'
c	PER CR/UC' TUA' SALUA' NOS XPC' REDE' TOR
d	PER CR/USE' TUA' SALUA' NOS XPC' REDE' TOR

³⁰ For a similar result in the thirteenth century see, J.D. Brand, 'The Shrewsbury Mint, 1249-1250', in *Mints, Dies and Currency, Essays in memory of Albert Baldwin*, edited by R.A.G. Carson (1971), p.142.

³¹ B & W p.292.

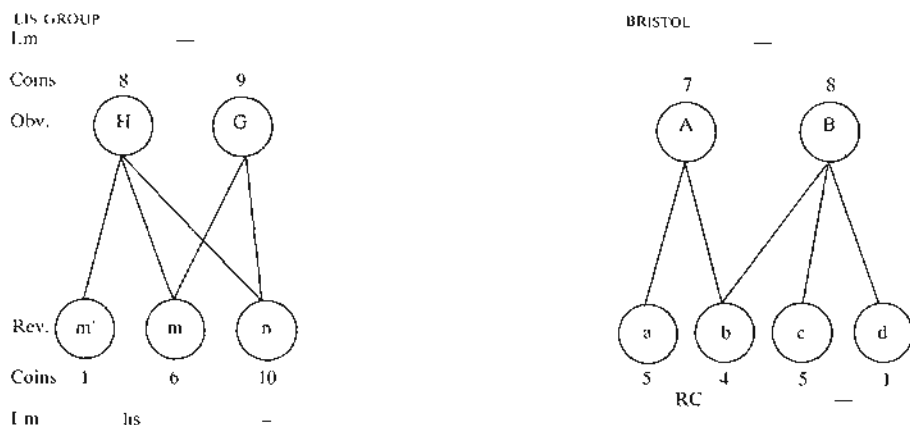


FIG. 5. Henry VI restored: 'Lis group' and Bristol angels

Although angels are known to have been struck at York³² and none has been identified, groats exist with the lis mark and the London mint signature. There remains the possibility that the 'lis group' coins were struck after Henry VI apparently lost control of the York mint on 25 December 1470.³³ The unambiguous Bristol angels form a very similar group of which fifteen coins are now known.

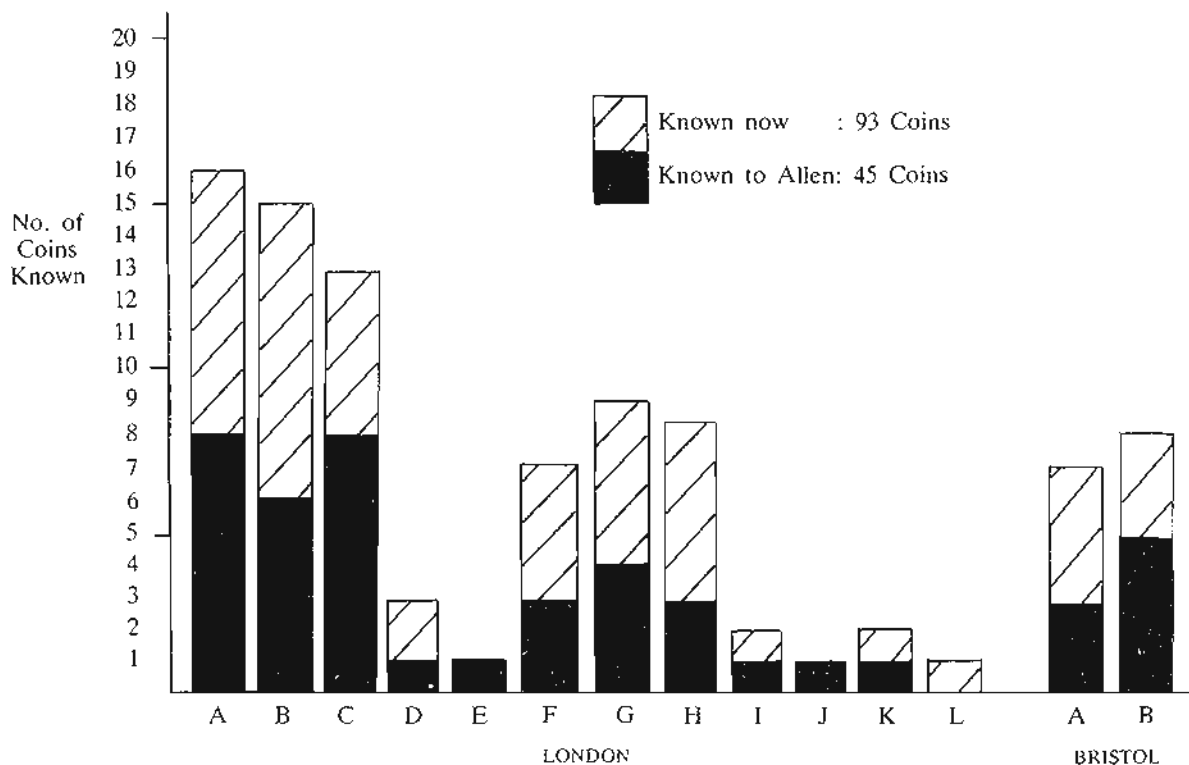


FIG. 6. Henry VI angels: obverse dies

³² Symonds, p.103.³³ Symonds.

It may be interesting to compare the number of coins per obverse die known to Allen in 1937 with the number known now (Figure 6). Allen recorded forty-five coins from thirteen obverse dies, five of which were singletons. This suggested that 86 per cent of the output of the London mint was stuck from known obverse dies. His sample was drawn largely from museum collections and it was therefore pre-selected. However, a further forty-eight specimens have produced only one new obverse die, while the remaining new specimens are spread across the known dies in almost exact proportion to the number of coins already known.

During the course of Edward's second reign the angel undergoes a series of developments. Between Type XII and Type XXI the stops evolve from trefoils to saltires and the lettering shows progressive replacement of a number of individual letters, notably the G and the L and including four further forms of the letter A. On the obverse DI becomes DEI and there are two new puncheons for the dragon's head. On the reverse CRUSE evolves to CRUCEM, REDE'TOR to REDEMPT, while the ship gains a fifth line to the hull. A summary of the angel obverse and reverse dies, Types XII to XIX, is set out in Appendices

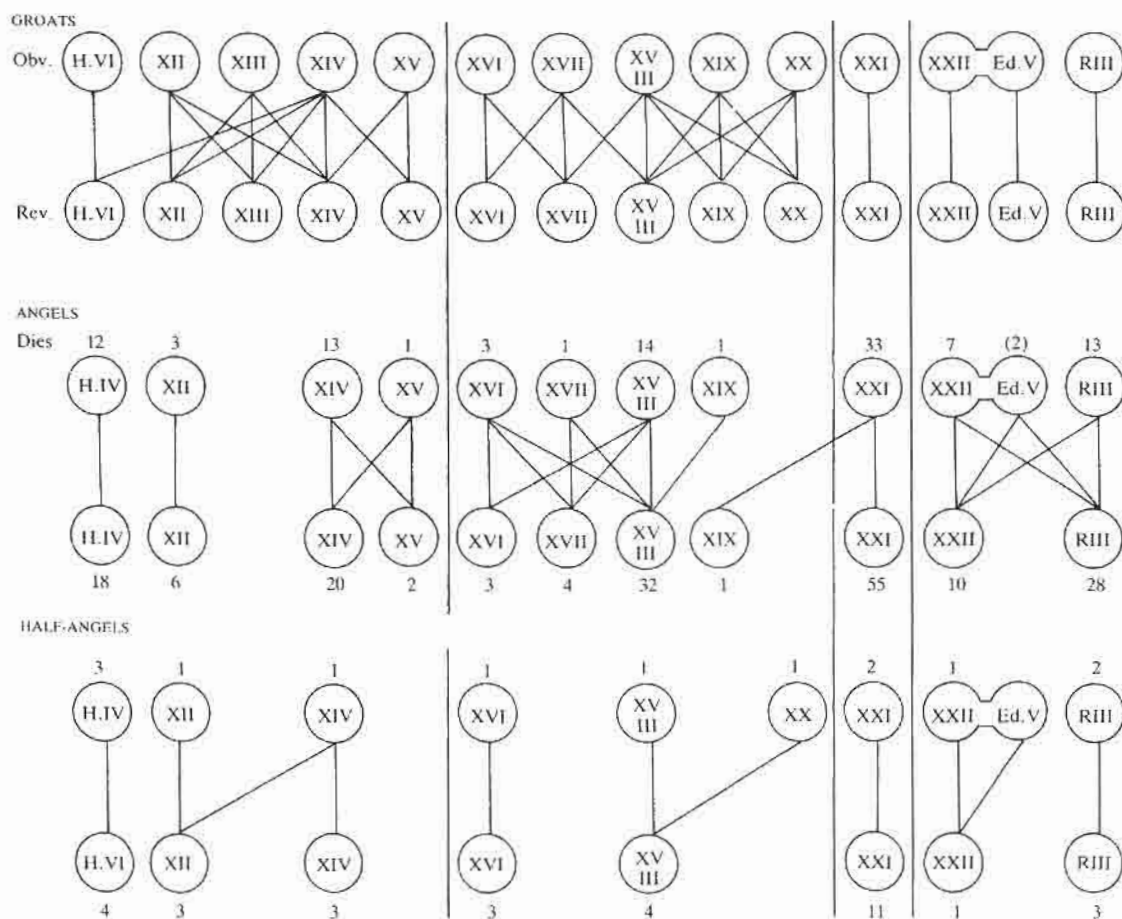


FIG. 7. Edward IV 2nd reign: mules

1 and 2. While most of these changes are purely evolutionary, one or two are of more than local significance.

The second reign of Edward IV, unlike the first, contains three clear cut breaks in the sequence of types where all existing dies appear to have been scrapped. Across these breaks there are either no die-links whatsoever or links only of an abnormal nature. These breaks occur between Types XV and XVI, XX and XXI, and XXI and XXII and divide the coinage into what might be called the annulet types, the cross types and the cinquefoil type. This is shown in Figure 7.

In the groats, the most prolific denomination, the types are continuously die-linked within each of these groups with heavy cross-linking across the shortest types – Types XIII and XIX. In the angels, a continuous but less prolific series requiring fewer new dies, these two short-lived types drop out and cross-links appear across the next shortest type – Type XVII. The half-angel issue required very few dies and it is, in essence, only represented by one new obverse for each major type. The missing types do not imply that no coins of that denomination were struck, rather that existing dies were serviceable and no new dies were required to continue production.

The first major type of the second reign is the annulet coinage of Type XIV employing thirteen known obverse dies (dies 4-16) and twenty reverse angel dies (dies 7-26). I have recorded fifty-four coins and the die count must be almost complete as there is only one obverse singleton.

Most of the changes in the legend and the stops occur in this issue (Appendix 1 and 2). They do not take place in a coherent order and since most of the dies are materially different they were probably cut singly. Thus the stops change from trefoils to saltires and then revert to trefoils, before becoming saltires permanently. It is, in practice, not possible to arrange either the obverse or the reverse dies in such an order that the changes in the stops, legends and lettering are compatible with each other.

Fortunately, there is a sequence of changes in the letter A. Letter A.3a inherited from Henry VI appears on Type XII but on the later reverse dies (3-6) it is joined by the large, flat-bottomed A.4. This is a letter from the groat fount and is the only letter found on both the obverse and the reverse of the early Type XIV angels. It is soon replaced by the large, but indented, letter A.4a for the middle of the type before this in turn is superseded by the familiar A.5. A similar sequence of changes in the letter A is also found on the groats of this type, though the only shared letter is the large A.4.

If the dies were cut and put into use singly the stock of dies in use at any one time would have been smaller than if they had been cut in batches, and while each die would strike no fewer specimens its active life would be shorter. Figure 8 condenses the obverse and reverse dies into groups by the form of the letter A and shows muling between adjacent forms but no longer range cross-linking.

The close relationship of obverse and reverse groups is again shown by the high percentage down the diagonal of the box. The priority of the lettering over the design means that the coins themselves are even more diverse than the individual dies and mix trefoil stops on the obverse with saltires on the reverse or vice versa. To classify the coins descriptively would be laborious since there are already thirty-nine die combinations and they are more easily seen as the product of two independent dies.

One of the most bizarre results of drifting dies occurs in the half-angels. The quite frequent combination of a reverse of Type XII (Appendix 3) and an obverse of Type XIV gives coins with the king's name on both sides.³⁴

With the start of the cross types, Types XVI-XX, the coinage enters a new and more

³⁴ B & W, p.309.

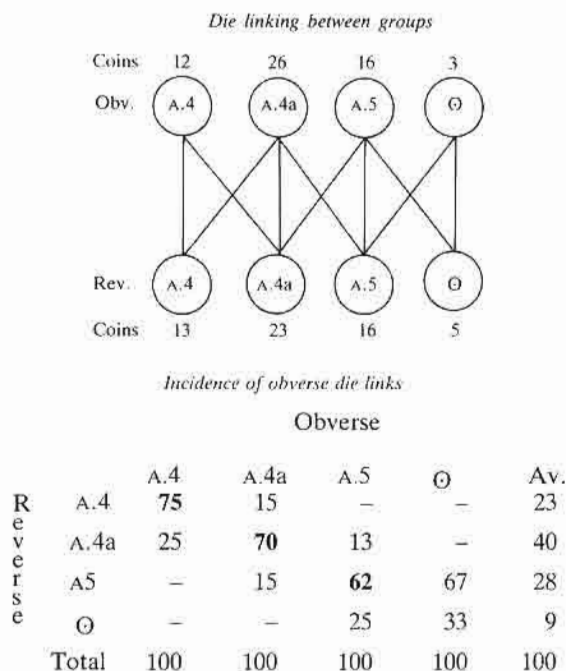


FIG. 8. Edward IV angels: Types XIV–XV

mature phase. Although a number of singleton dies remain, die batches are already quite coherent.

The series commences with a batch of three identical obverse and three reverse dies of Type XVI. The obverses are characterized by a large trefoil at the end of the legend. This is from the same punch employed for the trefoil introduced on the cusps of the groats in Type XV and its presence on the first angel dies cut thereafter may be a throwback to the fleuring practice of the first reign. If so, it was not continued and the gold remained unaffected when large fleurs were introduced on the groats on Type XVIII(b).

Throughout Types XVI–XIX there is heavy two-way muling and the obverse and reverse types become out of step. The ratio of obverse to reverse dies within each type is highly irregular: 3:3 in Type XVI, 1:4 in Type XVII and already 4:13 in Type XVIII(b), initial mark .+ . The surplus obverse dies of the early types took a long time to wear out and new reverse dies, of the later types, were required without the need to cut corresponding obverses.³⁵ In Figure 9 at least one obverse die of Type XVI, .+ . (die 19), was still in use when reverses of Type XVIII(b), .+ ., were introduced to the die pool. The result is that the modal combination for Type XVIII(a) falls below the diagonal line.

Type XVIII(b) introduced several innovations on the groats³⁶ – including large fleurs on the cusps, new larger saltire stops, DI for DEI and a new letter fount. The only punch common to the angel and the groat dies is the saltire stop punch. This duly changes on the angels, together with a new letter A, A.6, already noted. This change does not, however, occur on the introduction of Type XVIII(b). The first six reverse dies (40–43 and 44–5) have the old saltire stops and the letter A.5. These dies are only found muled with earlier

³⁵ Stewart, p. 104 records a similar situation under Edward III – groat dies sent to the new York mint in 1353 included

obverses of Class E but reverses of both class D and E.
³⁶ B & W, p. 297–98.

		Obverse Initial Mark						Coins	Dies	Singletons
		.+.	PC	+	.+	+	PC			
Reverse Initial Mark	.+.	8	-	1	-	-	-	9	3	1
	PC	3	2	2	1	-	-	8	4	1
	+	2	-	3	-	-	-	5	4	3
	.+	2	1	8	9	-	-	20	13	8
	+	-	-	-	9	23	1	33	15	4
	PC	-	-	-	-	-	-	-	1	-
Coins		15	3	14	19	23	1			
Dies		3	1	3	4	7	1			
Singletons		1	-	-	-	1	1			
TOTALS:		Obverse dies		19						
		Reverse dies		40						
		Combinations		60						
		Coins		75						

FIG. 9 Edward IV Angels: Types XVI-XIX

obverses and they were cut, put into stock and used up before any Type XVIII(b) obverses were produced.

The last major type of the second reign is the cinquefoil issue, Type XXI. This is a very large issue and I have already recorded thirty-three obverse dies and fifty-five reverse dies of which many are identical. The obverse design is unchanged from the previous type but the reverse produces an important innovation – the five-lined ship (plate 7, A and B) which is now used until the end of Richard III and replaced the four-lined version.

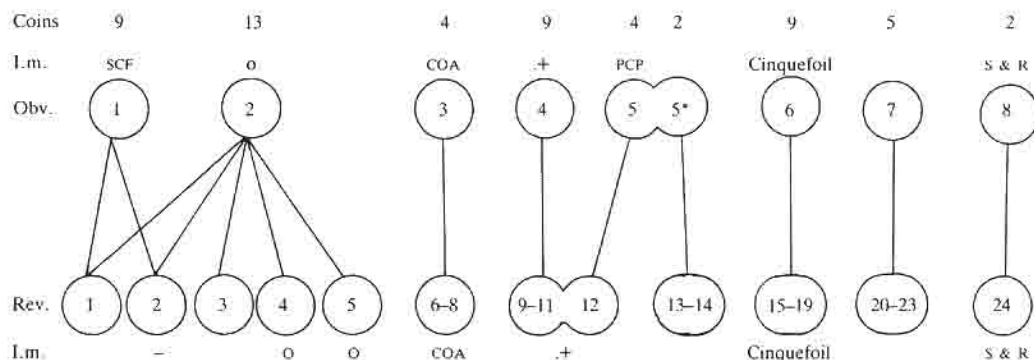
Approximately half way through the currency of Type XXI there is a change in the lettering. The small letters G and L used in the half-groat fount throughout this period are replaced by larger forms. The early G.1 is a neat upright cypher (plate 5, A, and Appendix 4) while the later G.2 is a much heavier spiral form (plate 5, B and C). These two forms also occur in the groat fount but the change comes not in the middle of Type XXI but at the beginning of Type XVIII(b) and it was delayed on the half-groat fount until the old letter punch wore out. At the same time as the G and L change, the broken topped R (R.7a) employed since Type XIX is replaced by an intact version (R.7b).

The last seven obverse dies of the type show a new puncheon for the dragon's head. This is distinguishable by the loop at the end of the forehead which is now broken where on the previous puncheon it was closed. The change is useful for the new puncheon is found on both dies with initial mark cinquefoil and pellet (plate 5, C), confirming that they come right at the end of the series.

A curious and unexplained feature of the angels is the pattern of muling between Types XIX and XXI. Blunt and Whitton have pointed to the curious lack of mules between Type XXI and other types and in fact mules occur only in the angels and a single groat on which the marks, unfortunately, are indistinct. Only one angel reverse die of Type XIX is known (die 68). It bears the normal early lettering and the four-lined ship but is not known as a true type. It is found muled with at least seven different obverse dies of Type XXI, all of which show the late lettering and six of which show the late dragon's head puncheon. These mules can only have been struck right at the end of the currency of Type XXI, probably in 1482, and though they might be trial strikings of newly cut dies they are rather curious.

Once the angel Type XIX–XXI mules are discounted, there remain no true mules into Type XXI and their absence suggests that the introduction of this type was felt by the mint to be important. The half-angels provide further evidence that this was so. The sole obverse die of Type XX initial mark cross with a central pellet is subsequently found with the initial mark over-struck with a cinquefoil combined with reverses of Type XX.³⁷ Given the tolerant attitude displayed by the mint to mules, such overstriking is quite exceptional – it is the only instance in the gold coinage of Edward IV – and indicates a transition of some significance.

In other respects the half-angels (Appendix 3) are comparable to the angels. This is not surprising since they share the same half-groat fount to the extent that, of the two true Type XXI obverses one shows the old letters (die 6) and one the new (die 7). From Type XIV only one half-angel obverse was in use at one time.



COA = cross on annulet; PCP = pierced cross with central pellet; SCF = short cross fitchee; S & R = sun and rose.

FIG. 10. Edward IV half-angel die-links

When the coinage had settled down, from Type XVI, a batch of reverse dies was cut for use with each new obverse die in a ratio of at least 4:1. The dies in each batch are all identical but quite distinct from those they replace.

In trying to establish an absolute chronology for the second-reign types, and hence a possible explanation for the divisions shown in Figure 7, we are fortunate in possessing an unbroken record of the gold bullion coined at the Tower between May 1471 and 9 April 1483: 15,159 lbs Tower,³⁸ or the equivalent, if struck into angels alone, of 1,023,200 angels.³⁹ Since there is little doubt that the sun and rose initial mark was introduced consequent on the indenture of 12 February 1483 between the king and the new master, Bartholomew Reed,⁴⁰ we may concentrate on the 15,018 lbs coined up to December 1482.

Table 10 gives the number of known angel dies used during Edward IV's second reign. There are 69 obverse dies, Type XII–XXI, with possibly another 10 outstanding and 123 reverse dies with as many as 40 outstanding. An obverse die struck, on average and allowing for the half-angels, 12,000⁴¹ angels and a reverse die around 6,000. If the types are

³⁷ B & W, p. 310.

³⁸ E. Stokes, 'Tables of bullion coined from 1377 to 1550', *NC* (1929), 56–58.

³⁹ 1 lb Tower = 5400 grains or 67½ angels.

⁴⁰ B & W, p. 9.

⁴¹ 1,013,715 angels divided by 69 known + 10 unknown obverse dies = 12,830 angels per die, less allowance for half-angels = around 12,000 angels per die.

TABLE 10

Edward IV known angel dies

TYPE	XII	XIV	XV	XVI	XVII	XVIII	XIX	XXI	XXII	Total
<i>Obverse dies</i>	3	13	1	3	1	14	1	33	7	76
Singletons	—	1	—	1	—	1	1	11	1	16
% Known dies	100	98	100	93	100	98	—	89	94	94
<i>Reverse dies</i>	6	20	2	3	4	32	1	55	10	133
Singletons	4	6	1	1	1	15	—	32	3	63
% Known dies	64	88	80	89	88	74	100	68	87	76

divided into groups and the assumption made that the output of each group is proportional to the number of known dies it contains we reach the percentages of total output given in Table 11.

TABLE 11

Apportionment of Output: Apr. 1471 to Dec. 1482

	<i>XII-XV</i>	<i>XVI-XIX</i>	<i>XXI</i>	
Known Obverse Dies	24%	28%	48%	
Known Reverse Dies	23%	32%	45%	
Park Street Find	20%	26%	54%	(35 coins)
Listed	19%	24%	57%	(144 coins)
<i>Best Estimate</i>	22%	26%	52%	
	3,300 lbs	3,900 lbs	7,800 lbs	15,018 lbs Tower
Approx. Closing Date	Nov. 1472	Sept. 1475	Dec. 1482	

The known obverse dies suggest that Type XXI accounted for 48 per cent of output, the reverses that it accounted for 45 per cent. These figures are reasonably close but it is almost certain that the number of dies used for Type XXI is underrecorded compared to other types (Table 10) and these figures can be compared to the percentage of coins of each group recorded in the Park Street Find and also those listed for sale by London dealers over a period of twenty years. None of these measures alone is entirely reliable, but together they give a fair picture and the best estimate for the relative output of each group is unlikely to be more than two or three percentage points out. These figures can be matched to the records of bullion coined to give an approximate closing date for the first two groups.

Figure 11 gives the actual monthly figures of gold bullion⁴² coined or, where monthly figures are not available, the average monthly figures. The monthly figures vary considerably but there are no significant gaps in the coinage of gold and there is no discernable seasonal pattern of output, though there is a steady decline in the quantity of gold bullion passing through the mint. It is curious that the average annual output of the

⁴² Symonds, *ibid.* The monthly breakdown for October 1483 to September 1484 has not been published but is given in PRO. E101/295/3.

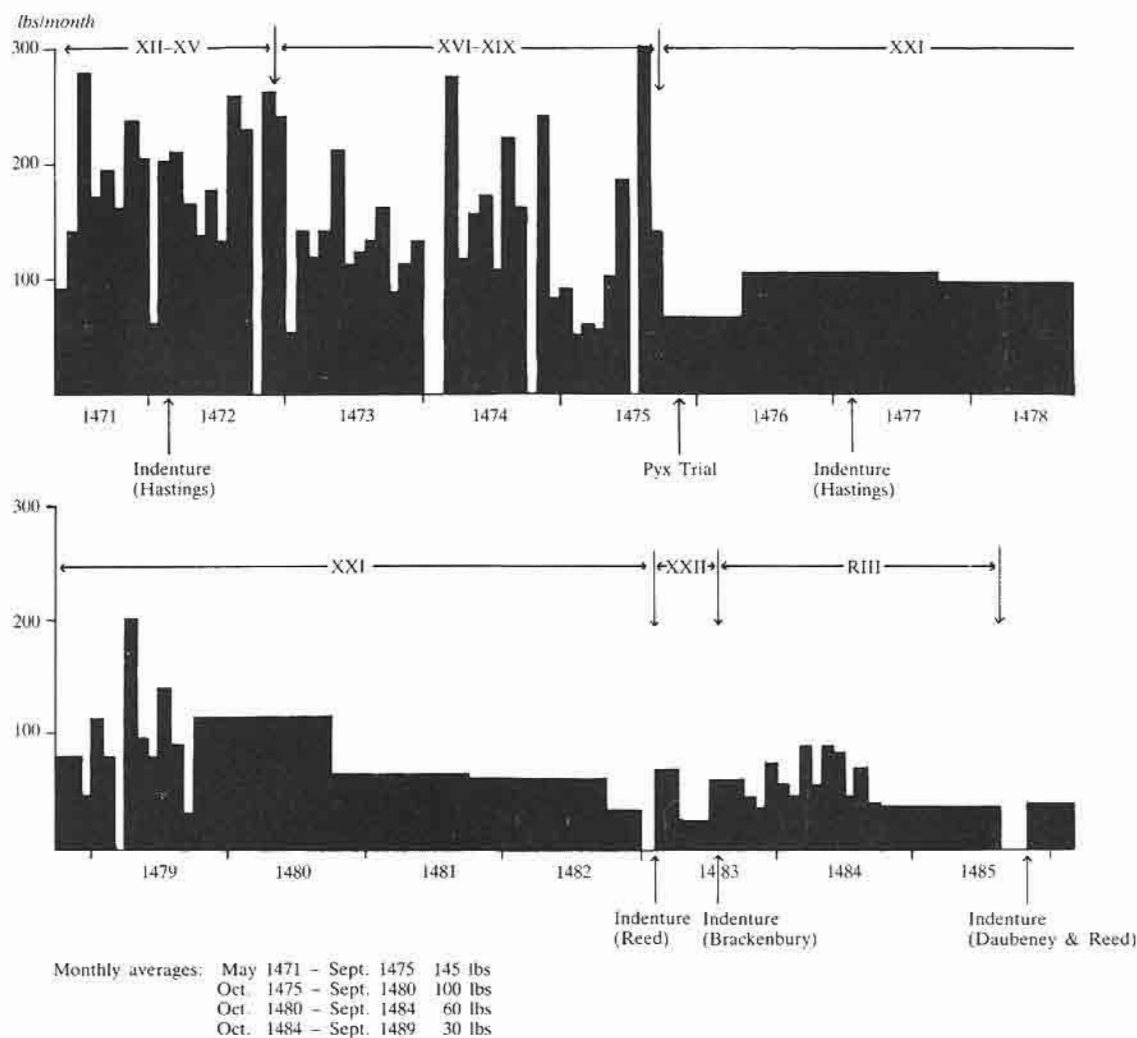


FIG. 11. Gold bullion coined: Tower mint 1471-85

London mint in Edward's second reign at £28,000 in gold and £8,000 in silver falls well short of the king's estimated annual revenue from customs and his French pension alone – £47,000 sterling.⁴³

The arrows above the histogram are the computed dates on which the types changed and those below are dates of documented importance. The two indentures with Lord Hastings, 23 February 1472⁴⁴ and 3 February 1477,⁴⁵ are concerned with the level of seigniorage only and there is therefore no apparent reason why Type XV closed so decisively towards the end of 1472. It seems to be more than a coincidence, however, that the best estimate for the beginning of Type XXI lies so close to the only recorded second-reign trial of the pyx on 1 December 1475.

This pyx trial is recorded in detail by Henry Symonds.⁴⁶ It covered the output of the

⁴³ C. Ross, *Edward IV* (1983), p. 385.

⁴⁴ B & W, p. 9.

⁴⁵ B & W, p. 9.

⁴⁶ Symonds, pp. 108-10.

Tower mint for the entire period from the beginning of the second reign to 30 November 1475 and although the coins involved were contained in and taken from thirty-six satchels they were intermingled before they were assayed. There is therefore no evidence that the type of the coin was noticed or taken into account during the procedure of the trial. Since Hastings held the mastership for the whole period there was no reason to do so. It is possible that the eleven changes of type which had taken place in the preceding four years were felt to be unnecessary and the cinquefoil coinage introduced after the trial was consequently left unchanged for the remaining seven years of Hastings's mastership.

A date of late 1475 for the beginning of Type XXI does not conflict with evidence provided by the episcopal mints⁴⁷ and it would permit the prolific Canterbury half-groats, hitherto condensed into the last few years of the reign to be spread over a longer period. It is also fully consistent with the evidence of the 1477 trial plate which bears the impression of a Type XXI angel with the early lettering.⁴⁸

APPENDIX 1

Edward VI angels: obverse dies Types XII to XIX

Type XII								Comments
1-3.	SCF	EDWARD' DI	GRA' REX	ANGL' Z	FRANC' ✠	A.3b		
Type XIV								
4.	o	EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	A.4		
5.		EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
6.		EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
7.	o	EDWARD' DI	GRA' REX	ANGL' Z	FRANC' ✠	A.4a		
8.	o	EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
9.	o	EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
10.	o	EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
11.	o	EDWARD' DI	GRA' REX	ANGL' Z	FRANC' ✠	"		
12.	o	EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
13.	o	EDWARD' x DI x	GRA' x REX x	ANGL' x Z	FRANCIE x ✠	"		
14.	o	EDWARD' DI	GRA' REX	ANGL' Z	FRANCIE ✠	A.5		
15.	o	EDWARD' x DI x	GRA' x REX x	ANGL' x Z	FRANCIE x ✠	"		
16.	o	EDWARD' DEI	GRA' REX	ANGL' Z	FRANC' ✠	"		
Type XV								
17.	O	EDWARD' x DEI x	GRA' x REX x	ANGL' x Z x	FRANC' x ✠	"		
Type XVI								
18-20.	✠	EDWARD' x DEI	GRA' x REX x	ANGL' x Z x	FRANC' x ✠	"		
Type XVII								
21.	PC	EDWARD' x DEI x	GRA' x REX x	ANGL' x Z x	FRANC' x ✠	"		
Type XVIII (a)								
22-24.	✠	EDWARD' x DEI x	GRA' x REX x	ANGL' x Z x	FRANC' x ✠	" (Die 22 ✠ ✠; Die 23 ✠ ✠)		
Type XVIII (b)								
25.	✠	EDWARD' x DEI ✠	GRA' x REX x	ANGL' Z	FRANC' ✠	A.6; Large saltire stops		
26.	✠	EDWARD' DEI	GRA' REX x	ANGL' x Z x	FRANC' ✠	"		
27.	✠	EDWARD' x DEI x	GRA' REX x	ANGL' x Z x	FRANC' ✠	" Dragon's head 2		
28.	✠	EDWARD' x DEI x	GRA' REX x	ANGL' x Z x	FRANC' ✠	"		
Type XVIII (b)								
29-31	✠	EDWARD' DI	GRA' REX	ANGL' Z	FRANC' ✠	" " " (Die 30 ✠)		
32-35	✠	EDWARD' x DEI x	GRA' x REX	ANGL' x Z x	FRANC' ✠	" " " (Die 33 ✠ ✠; 34 ✠ ✠; 35 x ✠)		
Type XIX								
36.	PC	EDWARD' DEI x	GRA' x REX x	ANGL' x Z	FRANC' ✠	" " "		

⁴⁷ B & W, pp.12-14.

Museum.

⁴⁸ The actual coin from this die is in the Hunterian

APPENDIX 2

Edward IV angels: reverse dies Types XII to XIX

Type XII								Comments
1-2.		PER	C/RUSE'	TUA'	SALUA	NOS	XPC'	REDE'TOR A.3b
3-6.		PER	CR/USE'	TUA'	SALUA	NOS	XPC'	REDE'TOR A.3b & A.4
Type XIV								
7.	o	PER	/CRUSE'	TUA'	SALUA	NOS	XPC'	REDE'TOR A.4
8.		PER	CR/USE'	TUA'	SALUA	NO'	XPC'	REDE'TOR "
9.		PER	C/RUSE'	TUA'	SALUA	NO'	XPC'	REDE'TOR "
10.		PER	CR/WSE'	TUA'	SALUA	NOS	XPC'	RE DET "
11.		PER	CRUSE'	TUA'	SALUA	NOS	XPC'	REDEM'TOR A.4a
12.		PER	CRUSE'	TUA'	SALUA	NOS	XPC'	RE'DEMTOR "
13.		PER	CRUSE'	TUA'	SALUA	NOS	XPC'	REDE'TOR "
14.		PER	CR/SEM	TUA'	SALUA	NOS	XPC'	REDE'TOR "
15.		PER	CR/SEM	TUA'	SALUA	NOS	XPC'	REDE'TOR "
16.		PER	CRU/SE'	TUA'	SALUA	NOS	XPC'	REDE'TOR "
17.		PER	CRU/SE'	TUA'	SALUA	NOS	XPC'	REDE'TOR "
18.		PER	CRU/SE'	TUA'	SALUA	NOS	XPC'	REDE'TOR "
19.	o	PER	CR/USE'	TUA'	SALUA	NOS	XPC'	REDE'TOR "
20.		PER	CR/USE'	TUA'	SALUA	NOS	XPC'	REDE'TO' "
21.		PER	CR/USE'	TUA'	SALUA	NOS	XPC'	REDE'TO' "
22.		PER	CR/USE'	TUA'	SALUA	NO'	XPC'	REDEM'TOR A.5
23.		PER	CR/USEM*	TUA'*	SALUA*	NOS	XPC'	REDE'TOR "
24.		PER	CR/USEM*	TUA'*	SALUA*	NOS*	XPC'*	REDE'TOR "
25.		PER	CR/USEM	TUA'*	SALUA*	NOS	XPC'	REDE'TOR "
26.	o	PER	C/*RUSEM*	TUA'	SALUA*	NOS*	XPC'	REDEMPT' "
Type XV								
27-28.	o	PER*	/CRUCEM*	TUA'*	SALUA*	NOS*	XPE'*	REDEMPT' "
Type XVI								
29-31.	+	PER	C/RUCEM	TUA'	SALUA	NOS	XPE'	REDEMPT' "
Type XVII								
32-35.	PC	PER*	C/RUCEM*	TUA'*	SALUA*	NOS*	XPC'	REDEMPT'*
								(Die 32 PER C/RUCEM)
Type XVIII (a)								
36-38.	+	PER	C/RUCEM	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
39.	+	PER	CRUCEM	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
Type XVIII (b)								
40-43.	+	PER	/CRUCEM*	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT'*
								(Die 42 SALUA NOS)
44-45.	+	PER	C/RUCEM*	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
46-47.	+	PER	C/RUCEM	TUA'*	SALUA*	NOS	XPC'	REDEMPT' A.6 ;
48.	+	PER	C/RUCEM	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
49-52.	+	PER	C/RUCEM*	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
								(Die 51 NOS* XPC)
53.	+	PER	C/RUCEM*	TUA'*	SALUA*	NOS*	XPC'	REDEMPT' "
54-55.	+	PER*	/CRUCEM*	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
56-57.	+	PER	/CRUCEM*	TUA'*	SALUA*	NOS*	XPC'*	REDEMPT' "
58-59.	+	PER	C/RUCEM*	TUA'*	SALUA*	NOS*	XPC'	REDEMPT' "
60-67.	+	PER	/CRUCEM*	TUA'*	SALUA*	NOS	XPC'	REDEMPT' "
Type XIX								
68.	PC	PER	C/RUCEM*	TUA'*	SALUA*	NOS	XPC'*	REDEMPT' "














APPENDIX 3

Edward IV half-angels

<i>Obverse dies</i>							<i>Comments</i>
Type	Die						
XII	1	SCF	O CRUX	AUE	SPES	. V NICA . 4	A.4
XIV	2	o	EDWARD' DI	GRA'	REX×ANGL'×4		A.4a
XVI	3	⊕	EDWARD'×DEI	GRA'	REX×ANGLE'4		A.5
XVIII (b)	4	+	EDWARD'×DI ×	GRA'×REX×ANGL' 4			A.6
XX	5	4	EDWARD'×DI×	GRA'×REX×ANGL'× 4			"
XXI (a)	6	Cinq.	EDWARD' DI	GRA	REX ANGL'× 4		G.1 ; R.7a
XXI (b)	7	Cinq.	EDWARD' DEI	GRA	REX ANGL 4		G.2; R.7b
XXII	8	S&R	EDWARD'×DI×	GRA	REX ANG 4		" "
<i>Reverse dies</i>							
Type	Die						
XII	1		EDWARD' DI	GRA'	REX·ANGL'·Z·FRA		A.4
	2		EDWARD' DI	GRA'	REX·ANGL'·Z·FR		"
	3		EDWARD' DI	GRA'	REX ·ANGL Z FR		"
XIV	4	o	00×/CRUX×AUE (rose)	SPES00UNICA			A.4a
	5	o	0 /CRUX (rose)	AUE SPES·UNICA			"
XVI	6-8	⊕	00 /CRUX	AUE (rose)	SPES×UNICA 0		A.5
XVIII	9-12	+	00 /CRUX 0	AUE (rosette)	SPES×UNICA (sun)		A.6
XXI	13-14	Cinq.	00 /CRUX×AUE (rosette)	SPES00UNICA (rosette)	0		R.7a ; 4 line ship
	15-19	Cinq.	00 /CRUX (rosette)	AUE00 SPES (rosette)	UNICA 0		R.7a ; 5 line ship
	20-23	Cinq.	00 /×CRUX (rosette)	AUE 00 SPES (rosette)	UNICA 0		R.7b ; 5 line ship
XXII	24	S&R	00 /CRUX×AUE 0	SPES 0	UNICA 0		R.7b ; 4 line ship

APPENDIX 4

Letter forms

	A.2a		G.1
	A.2b		G.2
	A.3		
	A.3a		R.7a
	A.3b		R.7b
	A.4		
	A.4a		
	A.5		
	A.6		

APPENDIX 5

Die links

*Obverse die Recorded reverse die-links*⁴⁹

Edward IV, first reign, Angels					25,368); l (2 : BM; H.Schneider); o (BM); s (SCMB Jul. 1982.)
1	1 (Bridgewater 16)		C	c	(2 : Fitzwilliam; Ryan 60); e (2 : BM; Bruun 428); f (Spurway 20); g (2 : BM; SCMB Nov. 1956); i (3 : BM; Ashmolean; Lockett 4316); o (2 : BNJ 12, 69; H.Schneider)
2	1 (BNJ 26, 221)				
3	2 (4 : BM; Lockett 1550; Ryan 81; Brussels Museum)				
4	3 (2 : BM; Hunterian)		D	h	(3 : BM; Spink Auction 32, 371; H.Schneider)
Henry VI, Angels			E	l	(BM)
A	a (2 : BM; H.Schneider); b (2 : Hunterian; Lockett 1605); c (2 : BM; Lawrence 48); e (4 : BM; Royal Mint; BNJ 17, 124; H.Schneider); f (2 : Mann 239; H.Schneider); g (2 : BM; Fitzwilliam); j (2 : Lockett 3155; CH 3, 313)		F	j	(H.Schneider); k (3 : BM; H.Schneider; Private collection); p (3 : BM; Lockett 4029; Hilton Price 41)
			I	k	(H.Schneider); q (BM)
			J	i	(Ashmolean)
			K	r	(2 : Lockett 1604; Bliss 221)
			L	s	Lockett 3153)
B	b (Ashmolean); d (4 : Ashmolean; Hird 2; Beresford-Jones 12; H.Schneider); f (2 : Glens 4 Mar. 81, 21; H.Schneider); g (Lockett 3154) j (3 : Ryan 59; Drabble 107; Spink Auction		G 'Lis group'	m	(Ryan 58); n (8 : Ashmolean; Lockett 1603; Ryan 57; Parsons 21; Norweb 206; H.Schneider; NCirc June 1971; Private collection)
			H	m	(5 : BM(2); Hunterian; Lockett 1606;

⁴⁹ Although many coins from the V.J.E. Ryan (Glendining 28 June 1950) and R.C. Lockett (Glendining 11 Oct. 1956; 4 Nov. 1958; 26 Apr. 1960 & 17 Nov. 1961)

collections have subsequently reappeared on the market, I have retained the original reference unless the coin is now in a museum collection.

	Rashleigh 11); m' (H.Schneider); n (2	22	31 (BM); 35 (2. Lockett 3164); 44
	: Fitzwilliam; Hunterian)		(Glens 23 Oct.83.2)
Bristol A	Bristol a (5 : BM; Hunterian; Lockett	23	37 (Ashmolean); 38 (BM); 46
	3156; Ryan 62; Beresford-Jones 13);		(A.H.Baldwin); 47 (Bridgewater 18);
	b (2 : Royal Mint; <i>NCirc</i> Oct. 1983)		48 (Sotheby 20 Nov. 70, 140); 49
B	b (2 : Cardiff; Ryan 63); c (5 : BM;		(Glens 23 May 84, 1)
	Ashmolean; Ryan 61; Walters 431;	24	39 (Glens 12 May 82, 14); 42 (BM); 45
	Private collection); d (Drabble 108)		(2, <i>SCMB</i> Apr. 1964)
		25	49 (Lockett 1622); 50 (<i>NCirc</i> Sep.
Henry VI, Half-angels			1975); 51 (J.H.Barnes 107); 53
A	a (3 : BM; Lockett 1607; Ryan 64)		(Lockett 4032); 54 (2, BM); 63
B	b (BM); b' (H.Schneider); c (Lockett	26	(A.H.Baldwin)
	3157)		33 (BM); 47 (BM); 48 (2, BM), 52 (2,
C	c (Ryan 65)		BM)
Bristol A	Bristol a (BM)	27	48 (BM); 59 (<i>SCMB</i> Dec. 1963); 60
			(Ashmolean)
Edward IV, Angels, Types XII to XIX ⁵⁰		28	54 (Lockett 1619); 56 (Sotheby 29
1	3 (5, c.f. Ryan 82); 4 (BM)		Jan.75, 60); 58 (BM)
2	1 (BM); 5 (2, Ashmolean)	29	54 (A.H.Baldwin); 60 (BM); 61 (<i>NCirc</i>
3	2 (Lockett 3163); 6 (Lockett 4310)		Sep 1971)
4	7 (3, BM)	30	56 (BM); 57 (Angers Hoard); 63
5	9 (Lockett 4319); 10 (2, BM); 11 (BM);		(<i>SCMB</i> Jan. 1965); 64 (BM)
	12 (Lockett 4031)	31	61 (A.H.Baldwin); 62 (Sotheby 21 Jul.
6	8 (2, Angers Hoard); 9 (Hunterian); 16		71, 12)
	(<i>SCMB</i> Mar. 1965)	32	58 (H.Schneider); 59 (3, <i>SCMB</i> May
7	8 (Cardiff); 9 (Ashmolean); 13 (2, BM)		1967); 65 (Fitzwilliam)
8	9 (Glens 24 Nov. 76, 64); 12 (2, BM); 13	33	65 (BM); 66 (<i>NCirc</i> Oct. 1970)
	(<i>SCMB</i> Jul. 1978); 14 (2, Ashmolean)	34	63 (3, BM); 64 (Glens 24 Nov. 76, 65);
9	15 (BM)		66 (Ashmolean); 67 (Lockett 4321)
10	15 (H.Schneider); 16 (Lockett 3161)	35	55 (BM)
11	10 (Angers Hoard); 17 (BM); (20 <i>BNJ</i>	36	66 (BM)
	12, 69)	Bristol 1	Bristol 1 (2 : BM; Cardiff); 2 (Ryan 86)
12	17 (<i>SCMB</i> Sep. 1964); 19 (<i>CH</i> 3, 313);		
	21 (3, BM); 25 (3, BM)	Edward IV, Half-angels, Types XII to XXII ⁵¹	
13	18 (<i>SCMB</i> Oct. 1961); 22 (Spink Auc-	1	1 (8, BM); 3 (H.Schneider)
	tion 16, 485)	2	1 (BM); 2 (5, BM); 3 (H.Schneider); 4
14	21 (BM); 22 (BM); 23 (Lockett 1617);		(3, Ryan 88); 5 (3, BM)
	25 (A.H.Baldwin)	3	6 (2, Lockett 4323); 7 (BM); 8 (BM)
15	24 (2, BM); 26 (<i>NCirc</i> Jul. 1983).	4	9 (4, BM); 10 (3, BM); 11 (2, <i>SCMB</i>
16	21 (BM); 22 (2, Glens 13 Mar. 75, 26);		Dec. 1973)
	25 (BM); 26 (BM); 27 (BM); 28 (3,	5	12 (4, BM)
	BM)	5*	13 (BM); 14 (Lockett 4034)
17	25 (2, Ashmolean); 28 (BM)	6	15 (BM); 16 (Lockett 1628); 17 (<i>NCirc</i>
18	29 (3, BM); 30 (Private collection)		Jan. 1974); 18 (Basmadjief 21); 19
19	30 (3, BM); 32 (BM); 33 (2, BM); 36 (2,		(Norweb 209)
	Lockett 4320); 40 (BM); 41 (BM)	7	20 (5, BM); 21 (Ryan 90); 22 (2, Noble
20	30 (Sotheby 18 Feb. 81, 12)		513); 23 (Lockett 1629)
21	32 (A.H.Baldwin); 34 (BM); 42	8	24 (2 : BM; Lockett 1646)
	(Wertheimer 102)		

⁵⁰ The angels and half-angels of Edward IV are considerably commoner than those of Henry VI and I have therefore given only one reference for each die-link.

⁵¹ Edward IV half-angels of Type XXI, obverse dies 6 and 7, are underrepresented in the sample as they are rarely illustrated in auction catalogues and dealers' lists.

KEY TO THE PLATES

PLATE 1

Edward IV first reign

1. Noble Type I, lis below shield (BM 1915 5-7-600)
2. Noble Type I, i.m. lis (BM 1915 5-7-600)
3. Ryal, die 2 (Fitzwilliam)
4. Ryal, die 6, i.m. rose (Hunterian)
5. Ryal, die 4, found with next three reverses (BM 1915 5-7-602)
6. Ryal, Type V die 2, found with obv. die 4 (A.H.Baldwin)
7. Ryal, Type VII die 31, found with obv. die 4 (BM 1915 5-7-602)
8. Ryal, Type VIII die 2, found with obv. die 4 (SCMB Jan. 1971)
9. Ryal, die 10, i.m. sun, ornate lettering (BM 1935 6-3-19)
10. Ryal, Type VII, TRANSIES (BM 1935 4-1-6408)
11. Ryal, Type VII, TRANSIENS last N over an s (Ashmolean)
12. Ryal, Type VII, one fleur missing, (fleurs 2) (Angers Hoard)
13. Half-ryal, Type VII, no fleurs in spandrels (A.H.Baldwin)
14. Ryal, Type VI die 23, (fleurs 1) (BM E.4671)
15. Ryal, Type VII die 34, (fleurs 3) (BM 1946 10-4-598)
16. Ryal, Type VIII, i.m. sun over crown (BM 1927 4-4-8)
17. Ryal, die 18, A.2a (Fitzwilliam)
18. Ryal, die 18, pellet added below shield (BM 1927 4-4-8)
19. Ryal, die 40, pellet below shield, A.2b (Ashmolean)
20. Ryal, die 62, four-line ship, two ropes at stern (Lockett 4304)

PLATE 2

Edward IV first reign (coins known)

1. Angel, die 1 (1 known), Type V (Bridgewater 16)
2. Angel, die 2 (1), Type V (BNJ 26, 221)
3. Angel, die 3 (4), Type V (BM E.4696)
4. Angel, die 4 (2), Type VII (Hunterian)
5. Half-ryal sharing poop, prow and rose puncheons (BM 1925 2-5-4)
6. Angel, die 1 (2), Type V.1, i.m. rose (BNJ 26, 221)
7. Angel, die 2 (4), Type V.2, i.m. rose (BM E.4696)
8. Angel, die 3 (2), Type VII, i.m. crown (Hunterian)

Henry VI restored, angel obverse dies

- A (16), no i.m. A.3, Batch 1 (BM 1915 5-7-596)
- B (15) " " " " (Ashmolean)
- C (13), no i.m. A.3a, Batch 2 (Ashmolean)
- D (3) " " " " (BM 1920 8-16-82)
- E (1), i.m. restoration cross, A.3a Batch 3 (BM E.4662)
- F (7) " " " " " " (BM M.240)
- I (2), i.m. restoration cross A.3b, Batch 4 (H.Schneider)
- J (1) " " " " " " (Ashmolean)
- K (2) " " " " " " (Lockett 1604)
- L (1) " " " " " " (Lockett 3153)
- 'Lis group', G (9), no i.m., A.3a (Ashmolean)
- H (8) " " " " " " (Fitzwilliam)
- Bristol, A (7), no i.m., A.3a (BM E.4663)
- B (8) " " " " " " (BM 5-7-598)

Henry VI restored, half-angels

- A (3), no i.m., A.3a (BM Grueber 340)
- B (3) " " " " (H.Schneider)
- C (1) " " " " (Ryan 65)
- Bristol, A (1), no i.m., A.3a (BM 1956 10-10-4)

PLATE 3

Henry VI restored, angel reverse dies

- a (2), i.m. cross pattee, A.3a, Batch 1 (BM E. 4660)

b (3)	"	"	"	(Ashmolean)
c (4)	"	"	"	(Fitzwilliam)
d (4)	"	"	"	(Ashmolean)
e (6), i.m. restoration cross,	A.3a	Batch 2		(Royal Mint)
f (5)	"	"	"	(Glens 4 Mar. 1981, 21)
g (6)	"	"	"	(Lockett 4316)
h (3)	"	"	"	(Lake 288)
i (4), i.m. restoration cross,	A.3a	Batch 3		(Ashmolean)
j (6)	"	"	"	(Lockett 3155)
k (4)	"	"	"	(H.Schneider)
l (3)	"	"	"	(BM E.4662)
o (3), no. i.m.,	A.3a	Batch 4		(BM 1935 4-1-2430)
p (3)	"	"	"	(Lockett 3153)
q (1),	A.3b	"		(BM 1920 8-16-83)
r (2)	"	"	"	(Lockett 4029)
s (2)	"	"	"	(Glens 15 Apr 1971, 60)
'Lis group', m (6), i.m. lis,	A.3a			(Hunterian)
m'l(1)	"	"		(H.Schneider)
n (10), no i.m.	A.3a			(Ashmolean)
Bristol, a (5), i.m. restoration cross,	A.3a			(BM E.4663)
b (4)	"	"		(Royal Mint)
c (5), no i.m.	A.3a			(BM 1915 5-7-598)
d (1)	"	"		(Drabble 108)
Henry VI restored, half-angels				
a (3), i.m. lis,	A.3a			(BM Grueber 340)
b (1), i.m. cross pattee,	A.3a			(BM 1886 4-1-1)
b' (1)	"	"		(H.Schneider)
c (2), i.m. restoration cross,	A.3a			(Ryan 65)
Bristol a (1), i.m. restoration cross,	A.3a			(BM 1956 10-10-4)

PLATE 4

Edward IV second reign, angel obverse dies

1 (6), Type XII,	i.m. short cross fitchee,	A.3b	(BM 1935 4-1-6444)
2 (4)	"	"	(Ashmolean)
3 (2)	"	"	(Lockett 3163)
4 (3), Type XIV,	i.m. annulet,	A.4	(Lockett 1618)
5 (5)	"	"	(BM 1935 4-1-6449)
6 (4)	"	"	(Hunterian)
7 (4),	"	A.4a	(BM 1935 4-1-6447)
8 (6)	"	"	(Ashmolean)
9 (1)	"	"	(BM 1950 3-3-7)
10 (2)	"	"	(Lockett 3161)
11 (3)	"	"	(BM E.4699)
12 (8)	"	"	(BM 1935 4-1-6453)
13 (2)	"	"	(Spink Auction 16, 485)
14 (4),	"	A.5	(BM 1935 4-1-6450)
15 (3)	"	"	(BM 1946 10-4-599)
16 (9)	"	"	(BM M.245)
17 (3), Type XV,	i.m. pellet in annulet,	A.5	(Ashmolean)
18 (4), Type XVI,	i.m. ✠,	A.5	(Lockett 1620)
19 (10)	"	"	(Lockett 4320)
20 (1)	"	"	(Sotheby 18 Feb. 1981, 12)
21 (3), Type XVII,	i.m. pierced cross,	A.5	(A.H. Baldwin)
22 (4), Type XVIII(a),	i.m. ✠,	A.5	(Lockett 3164)
23 (6)	"	"	(Ashmolean)
24 (4)	"	"	(BM 1915 5-7-609)
25 (7), Type XVIII(b),	i.m. ✠,	A.6	(Lockett 4032)
26 (6)	"	"	(BM 1935 4-1-6461)
27 (3),	"	"	(Ashmolean)
28 (3)	"	"	(BM 1935 4-1-6470)

Dragon's head 2

PLATE 5

29 (3), Type XVIII (b), i.m. +	A.6	(Ashmolean)
30 (4) " " "	"	(Angers Hoard)
31 (2) " " "	"	(A.H.Baldwin)
32 (5) " " "	"	(Fitzwilliam)
33 (2) " " "	"	(BM 1935 4-1-6469)
34 (6) " " "	"	(Ashmolean)
35 (1) " " "	"	(BM 1935 4-1-6460)
36 (1), Type XIX, i.m. pierced cross,	A.6, R.7a	(BM 1935 4-1-6457)
A (18 dies), Type XXI early, i.m. cinquefoil	A.6, R.7a, G.1	(BM 1935 4-1-6474)
B (13 dies), Type XXI late, i.m. cinquefoil	A.6, R.7b, G.2	(BM 1935 4-1-6472)
C (2 dies), " i.m. pellet and cinquefoil, dragon's head	3	(BM 1915 5-7-612)
Bristol 1 (3), Type XIV, i.m. annulet,	A.4a	(BM 1854 6-21-74)

Edward IV second reign, angel reverse dies

1 (1), Type XII, no. i.m.,	A.3b	(BM E.4698)
2(1) " " "	"	(Lockett 3163)
3 (5), " " "	A.3b and A.4	(Ryan 82)
4 (1) " " "	"	(BM 1935 4-1-6444)
5 (2) " " "	"	(Ashmolean)
6 (1) " " "	"	(Lockett 4310)
7 (3), Type XIV, i.m. annulet,	A.4	(Ashmolean)
8 (3), " no i.m.	"	(Cardiff)
9 (4) " " "	"	(Ashmolean)
10 (3) " " "	"	(BM 1935 4-1-6449)
11 (1), " " "	A.4a	(BM E.4701)
12 (3) " " "	"	(Lockett 4031)
13 (3) " " "	"	(BM 1935 4-1-6447)
14 (2) " " "	"	(Ashmolean)
15 (1) " " "	"	(BM 1950 3-3-7)
16 (2) " " "	"	(Lockett 3161)

PLATE 6

17 (3) " " "	"	(BM E.4699)
18 (1) " " "	"	(SCMB Oct. 1961)
19 (1) " i.m. annulet	"	(CH 3, 313)
20 (1), " no i.m.	"	(BNJ 12, 69)
21 (5) " " "	"	(BM 1935 4-1-6445)
22 (4), " " "	A.5	(BM 1935 4-1-6450)
23 (1) " " "	"	(Lockett 1617)
24 (2) " " "	"	(BM 1946 10-4-599)
25 (7) " " "	"	(A.H.Baldwin)
26 (2), " i.m. annulet	"	(BM 1918 5-3-41)
27 (1), Type XV, i.m. pellet in annulet,	A.5	(BM M.245)
28 (4) " " "	"	(Lockett 3162)
29 (3), Type XVI, i.m. +,	A.5	(Lockett 1620)
30 (5) " " "	"	(BM E.4704)
31 (1) " " "	"	(BM 1953 8-4-1)
32 (2) Type XVII, i.m. pierced cross,	A.5	(A.H.Baldwin)
33 (3) " " "	"	(BM 1920 8-16-83)
34 (1) " " "	"	(BM 1922 5-16-32)
35 (2) " " "	"	(Lockett 3164)
36 (2), Type XVIII(a), i.m. +,	A.5	(Lockett 4320)
37 (1) " " "	"	(Ashmolean)
38 (1) " " "	"	(BM 1915 5-7-611)
39 (1) " " "	"	(Glens 12 May 1982, 14)
40 (1) Type XVIII(b) i.m. +,	A.5	(BM 1920 8-16-84)
41 (1) " " "	"	(BM 1935 4-1-6456)
42 (1) " " "	"	(Wertheimer 102)
43 (1) " " "	"	(BM 1915 5-7-609)
44 (1) " " "	"	(Sotheby 20 Jul. 1983, 302)

PLATE 7

45 (2)	"	"	"	(SCMB April 1964)
46 (1)	"	"	A.6	(BNJ 25, plate XIV.8)
47 (2)	"	"	"	(Bridgewater 18)
48 (4)	"	"	"	(BM 1935 4-1-6462)
49 (2)	"	"	"	(Lockett 1622)
50 (1)	"	"	"	(NCirc September 1975)
51 (1)	"	"	"	(J.H.Barnes 107)
52 (2)	"	"	"	(BM E.4705)
53 (1)	"	i.m. +.	"	(Lockett 4032)
54 (4)	"	"	"	(Ashmolean)
55 (1)	"	"	"	(BM 1935 4-1-6460)
56 (2)	"	"	"	(BM E.4706)
57 (1)	"	"	"	(Angers Hoard)
58 (2)	"	"	"	(BM 1935 4-1-6470)
59 (4)	"	"	"	(Spink Auction 32, 372)
60 (2)	"	"	"	(Ashmolean)
61 (2)	"	"	"	(A.H.Baldwin)
62 (1)	"	"	"	(Sotheby 21 Jul. 1971, 12)
63 (5)	"	"	"	(A.H.Baldwin)
64 (2)	"	"	"	(Glens 13 May 1981, 6)
65 (2)	"	"	"	(BM 1935 4-1-6469)
66 (3)	"	"	"	(Ashmolean)
67 (1)	"	"	"	(Lockett 4321)
68 (8), Type XIX,	i.m. pierced cross,	A.6, R.7a		(H.Schneider)

A (28 dies), Type XXI early, i.m. cinquefoil A.6, R.7a, small L

B (27 dies), Type XXI late, i.m. cinquefoil A.6, R.7b, large L

Bristol 1 (2), Type XIV, i.m. annulet, A.4a

" 2 (1) " " "

(Ashmolean)

(BM 1935 4-1-6467)

BM 1854 6-21-74)

(Ryan 86)

PLATE 8

Edward IV, half-angel obverse dies

1 (9), Type XII,	i.m. short cross fitchee,	A.4	(Hunterian)
2 (13) Type XIV,	i.m. annulet,	A.4a	(H.Schneider)
3 (4), Type XVI,	i.m. cross on annulet,	A.5	(Lockett 4323)
4 (9), Type XVIII(b),	i.m. +.	A.6	(Hunterian)
5 (4), Type XX,	i.m. pierced cross with central pellet,	A.6, same die as next	(Ashmolean)
5* (2), Type XXI,	i.m. cinquefoil over pierced cross with central pellet,	A.6	(BM 1935 4-1-6476)
6 (5), Type XXI	early, in cinquefoil,	A.6, G.1, R.7a	(BM 1918 5-3-42)
7 (9), Type XXI	late, in cinquefoil	A.6, G.2, large L	(BM 1935 4-1-6477)
8 (2), Type XXII,	i.m. sun and rose,	A.6, G.2, large L	(BM 1915 5-7-615)

Edward IV, half-angel, reverse dies

1 (9), Type XII,	no i.m.,	A.4	(Hunterian)
2 (5)	"	"	(BM 1920 8-16-88)
3 (2)	"	"	(H.Schneider)
4 (3), Type XIV,	i.m. annulet,	A.4a	(Lake 290)
5 (3)	"	"	(Hunterian)
6 (2), Type XVI,	i.m. cross on annulet,	A.5	(Lockett 4323)
7 (1)	"	"	(BM 1920 8-16-89)
8 (1)	"	"	(BM 1972 2-6-2)
9 (4), Type XVIII,	i.m. +.	A.6	(Hunterian)
10 (3)	"	"	(Lockett 3167)
11 (2)	"	"	(SCMB Dec. 1973)
12 (4)	"	"	(NCirc March 1985)
13 (1), Type XXI early,	i.m. cinquefoil,	A.6, R.7a	(BM 1935 4-1-6476)
14 (1)	"	"	(Lockett 4034)
15 (1),	"	"	(BM 1918 5-3-42)
16 (1)	"	"	(Lockett 1628)
17 (1)	"	"	(Gantz 1149)

five line ship

18 (1)	"	"	" "	"	(Basmadjief 21)
19 (1)	"	"	" "	"	(Norweb 209)
20 (5), Type XXI late	i.m. cinquefoil,	A.6, R.7b	"	"	(SCMB June 1971)
21 (1)	"	"	" "	"	(Ryan 90)
22 (2)	"	"	" "	"	(Noble 513)
23 (1)	"	"	" "	"	(Lockett 1629)
24 (2), Type XXII,	i.m. sun and rose,	A.6, R.7b	four line ship	"	(BM 1915 5–7–615)

PLATE 1



PLATE 2



1



2



3



4



5



6



7



8



A



B



C



D



E



F



I



J



K



L



Lis Gp
G



Lis Gp
H



Bristol
A



Bristol
B



A



B



C



Bristol
A

PLATE 4



PLATE 5



29



30



31



32



33



34



35



36



A



B



C

Bristol
1

1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16

PLATE 6



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44

PLATE 7



45



46



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60



61



62



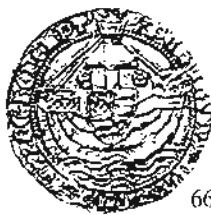
63



64



65



66



67



68



A



B

Bristol
1Bristol
2

PLATE 8

