DIE-MAKING IN THE TWELFTH CENTURY.

By SHIRLEY FOX, R.B.A.

CAREFUL observation of dies plays so important a part in the study of mediaeval coins, that a thorough understanding of the methods of the die-sinker is an important asset in the mental equipment of the numismatist. Owing, perhaps, to the absence of any readily accessible information many erroneous ideas on the subject are very prevalent, and therefore a short explanation of the processes employed in making a die may not be unwelcome.

A common error is the supposition that dies in mediaeval times were cut directly upon a prepared piece of metal, in the same manner as a seal or intaglio. Although this method may have been employed on rare occasions, it was certainly not often resorted to. A die was usually made by the use of a number of irons or punches, each cut to the requisite shape to produce some portion of the design; and these were punched by the die-sinker into the prepared piece of metal in such fashion as eventually to make up the complete die.

The saving of labour effected by this means is obvious, and it was often used, at any rate in the case of legends, in classical times. Similar methods are employed in a modified form at the present day, though the die for a coin of artistic merit naturally cannot be turned out with the few punches which sufficed for the artist of the twelfth century.

The die it is proposed to utilise for purposes of demonstration is that of an early short-cross penny in which the design and manner of executing it are both of a most simple character. Although the king's head is frankly barbarous, and the lettering is of the most primitive description, it may safely be asserted that the methods
employed in the manufacture of dies of this class were, in the main, used throughout the Saxon, Norman and Plantagenet periods. As art advanced the component parts became more numerous and elaborate. The king's crown, for instance, was no longer represented by a mere row of dots, but was gracefully and carefully shaped. That it was put in separately is often apparent from the rakish angle at which it is sometimes placed on the king's head. The hair on later coins instead of being composed of a couple of crescents is well and realistically formed, but that it also was made from separate irons is proved by certain coins of Edward I., from which the hair has been entirely omitted. As it is my intention fully to discuss dies of this period in a subsequent paper I shall not refer to them further at present, but will endeavour to describe the making of a short-cross die, and trust that a reference to the above illustration may help to make my meaning clear. It shows an enlarged photographic reproduction of an early short-cross penny (A), together with a drawing of the same coin showing its component parts (B). Below are also reproduced individual drawings of each of these showing the various tools used by the die-sinker in his work.
For purposes of demonstration it is proposed to credit the die-sinker with the possession of not more than twelve different irons. It is probable that he had actually rather more variety in the matter of crescents and pellets of varied size and shape, but it will be seen that even if he were reduced to a dozen simple tools, it is possible to turn out a die having all the characteristics of a short-cross coin. The twelve irons which it is proposed to allow the workman are as follows:

1. A large and straight upright, slightly tapered at either end.
2. A similar upright, but smaller.
3. A large crescent for backs of $\mathfrak{A}$, $\mathfrak{A}$, etc.
4. A smaller crescent for hair, eyebrows, loop of $\mathfrak{R}$, portions of $\mathfrak{S}$, etc.
5. A large pellet.
6. A smaller pellet.
7. A still smaller pellet of irregular shape for the king's beard.
8. A thin crescent for sleeve and neck.
9. An annulet for eyes.
10. A piece for the mouth.
11. A piece for the hand.
12. A large and slightly curved iron for making the inner circle.

We will now imagine the die-sinker with such a set of irons and endeavour to follow him in his task. He would probably begin by tracing with a compass upon the face of the future die two circles, one to represent the inner, the other the outer circle. These circles would then be definitely indicated, the former by several strokes of the large curved iron (No. 12), the latter by a series of dots, punched in close together with one of his pellet irons (No. 6). The inner circle being now ready to receive the royal effigy, the crown would be quickly produced with a row of large-sized dots (No. 5), surmounted by a

group of three (No. 5) united by small strokes (No. 2), to stand for the central ornament. Two shorter curves (No. 4) would do duty for the eyebrows and again for the hair. A single stroke of the larger straight iron (No. 1), with two pellets (No. 6), to form the nostrils, would suffice for the nose, and beneath this would be placed the mouth, punched in with its own special tool (No. 10). The neck would be indicated by a blow from the thinnest curve (No. 8) at either side, and this, with two annulets for eyes (No. 9), and a sprinkling of pellets (Nos. 6 and 7) to form the beard, would complete the royal portrait. The sceptre could then be put in with three strokes of the large-sized upright (No. 1), a single pearl (No. 5), to finish its base, and four united to make the jewelled head in the same manner as the central ornament of the crown. The hand (No. 11) being put in in its proper place, two thin curves (No. 8), to indicate the sleeve would now complete the general design.

The inscription, which our artist would be careful to put in retrograde, would be produced in the following simple fashion:—

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\begin{align*}
\text{b} & \quad \text{One straight upright stroke (No. 1), with a smaller stroke (No. 2) at right angles at either end and a short curve (No. 4) placed in front.} \\
\text{g} & \quad \text{A large curve (No. 3) to form the back, with a straight stroke (No. 1) in front and a smaller stroke (No. 2), to make the cross bar.} \\
\text{N} & \quad \text{Two uprights, formed as the back of the R, with a small diagonal stroke (No. 2) uniting them.} \\
\text{R} & \quad \text{A similar upright with two curves (No. 4) placed in front to complete the letter.} \\
\text{i} & \quad \text{An upright made as before.} \\
\text{g} & \quad \text{A large curve (No. 3) with a stroke (No. 1) in front.} \\
\text{v} & \quad \text{Two large strokes (No. 1) placed at the proper angle, and finished as before.} \\
\text{s} & \quad \text{Two small curves (No. 4) placed one above the other facing inwards, united by a small central stroke (No. 2) and their extremities finished as before.}
\end{align*}
\]

\[ R \text{ As before.} \]
\[ A \text{ As before.} \]
\[ X \text{ Simply two large strokes (No. 1) punched in, one across the other.} \]

This completes the obverse die, and that for the reverse could be produced with the same implements with equal facility.

It will be realised that a die of this description could be made very quickly, and when the enormous output of coins which occurred at certain periods is considered, it is evident that some other method than that of laboriously engraving each die must have been in use. There is ample evidence that the cutting of irons was a jealously guarded privilege, which at the period under consideration pertained to the FitzOtho family, whose rights descended from father to son. In the "Numismatic History of the Reigns of Edward I., II., and III.," which my brother and I commence in this volume, we intend to go very fully into many matters connected with the preparation and issue of dies. I shall, therefore, in order to avoid needless repetition, confine myself in the present paper to this brief description of the mechanical method of die manufacture.

I should like, in conclusion, to insist once more upon the great importance of this subject. By a careful study of dies many seemingly difficult problems can be solved; and accidental peculiarities of no real importance may be put aside as unworthy of attention. It will sometimes be found that a damaged or curiously formed punch has been used in making the dies for two apparently different coins, and a connecting link between them is thus established. Familiarity with the exact shapes of the irons made by the king's official engravers will often prove of great service in the detection of contemporary imitations, either of foreign workmanship or of unauthorised manufacture, as on almost all mediaeval coins of undoubtedly spurious origin, forms of hair, crown, mint-mark, cross, or lettering, will be found which do not exactly accord with those seen on the genuine pieces which they purport to imitate. These unlawful copies of royal coins must not, however, be confused with certain pennies issued by the Archbishop of York and
the Bishop of Durham, who were at various times authorised to make their own irons and dies. The coins produced under these conditions vary considerably from those coming from the royal mint and are often of quite barbarous work. But their very roughness of execution is generally sufficient to distinguish them from attempted imitations of genuine coins of good work.

These, however, are matters which must be dealt with in a subsequent paper.

I trust, meanwhile, that this brief explanation of the methods of die-making will prove of interest to those who have not given the subject special attention, and that it may possibly enable them to consider with renewed interest coins about which there seemed little or nothing more to discover.
WORN OUT DIES OF THE TIME OF EDWARD III. RETURNED FROM ECCLESIASTICAL MINTS AND NOW PRESERVED AT THE PUBLIC RECORD OFFICE.

The two complete dies are those of pence of the York and Durham mints. In the centre is the standard of a half groat of Edward III., from the royal mint at York, and on the left is the trussel belonging to it. On the right is another trussel for a penny.