

The Painting or Staining of Marble as Practised by William Byrd of Oxford and others

By MRS. J. C. COLE

IN the *Philosophical Transactions of the Royal Society* for the year 1665 the editor, Henry Oldenburg, includes a review of Athanasius Kircher's book *Mundus Subterraneus* which had just been published. He gives a brief account of the contents, including mention of the passages on the natural colouring of various stones and a method by which stone may be coloured artificially.¹ This passage evidently excited interest, for in his next number² the editor again refers to the subject and says :

'several Curious Persons, who either have not the leisure to read Voluminous Authors, or are not readily skilled in that Learned Tongue wherein the said Book is written, being very desirous to have it transferred hither, it was thought fit to comply with their desire herein.'

He goes on to give the origin of Kircher's receipt :

'The Author therefore of the *Mundus*, &c., having seen some stones reputed to be *natural* that had most lively Pictures, not only upon them, but passing *thorow* their whole substance, and thereupon finding an *Artist*, skilful to perform such rare workmanship, did not only pronounce such stones to be *artificial*, but when that *Artist* was unwilling to communicate unto him his Secret, did joyn his study and endeavors with those of one *Albertus Gunter* a *Saxon*, to find it out themselves : wherein having succeeded, it seems, they made the Experiments which this Industrious and communicative *Jesuit* delivers in this manner :

The Colours, saith he, are thus prepared ; I take of *Aqua fortis* and *Aqua Regis*, two ounces and of *Sal Armoniack* one ounce ; of the best *Spirit of Wine*, two drachms ; as much *Gold* as can be had for nine *Julio's* (a *Julio* being about six pence English) ; of pure *Silver*, two drachmes. These things being provided, let the Silver, when calcined, be put into a Vial ; and having powred upon it the two drachmes of *Aqua fortis*, let it evaporate, and you shall have a Water, yielding first a *blew* Colour, and afterwards a *black*. Likewise put the Gold, when calcin'd, into a Vial,

¹ 1, 109-117.

² *Ibid.*, 125 ff.

MRS. J. C. COLE

and having powred the *Aqua Regis* upon it, set it by to evaporate : then put the *Spirit of Wine* upon the *Sal Armoniack*, leaving it also till it be evaporated ; and you will have a Golden coloured Water, which will afford you divers Colours. And, after this manner, you may extract many *Tinctures* of Colours out of other Mettals. This done, you may, by the means of these two Waters, paint what Picture you please upon white Marble, of the *softer* kind, renewing the Figure every day for several days with some fresh superadded Liquor, and you shall find in time, that the Picture hath penetrated the *whole* solidity of the stone, so that cutting it into as many parts as you will, it will always represent unto you the same Figure on both sides.'

The editor concludes :

' So far be, which how far it answers expectation, is referred to the Tryal of Ingenious Artists. In the mean time there are not wanting Experienced Men that scruple the Effect, but yet are far from pronouncing any thing positively against it, so that they doe not discourage any that have conveniences, from trying.

' But whether the way there mentioned will succeed, or not, according to expectation : Sure it is that a Stone-cutter in *Oxford*, Mr. *Bird*, hath many years since found out a way of doing the same thing, in effect, that is here mentioned ; and hath practised it for many years. That is, he is able so to apply a colour to the outside of polished Marble, as that it shall sink a considerable depth into the body of the stone ; and there represent like figures or images as those are on the outside ; (deeper or shallower according as he continues the application, a longer, or lesser while). Of which kind there be divers pieces to be seen in *Oxford*, *London*, and elsewhere. And some of them being showed to his Majesty, soon after his happy restauration, they were broken in his presence, and found to answer expectation. And others may be dayly seen, by any who is curious, or desirous to see it.'

William Byrd, referred to in this passage, was a Gloucestershire man by birth,³ who had served his apprenticeship under Walter Nicholls, a stonecutter who worked in Gloucester and the neighbourhood. Nicholls died in 1648 and in that year Byrd came to Oxford and then or a little later set up a yard in Holywell just outside the city wall. Here in 1658, Anthony Wood tells us, ' William Byrd, of Hallywell in the suburbs of Oxon, stonecutter, did in the latter end of this yeare find out the paynting or stayning of marble : a specimen of which he presented to the king after his restoration, as also to the queen, and in 1669

³ Son of Thomas Bird, baptized 1 June 1624, in St. Nicholas' church, Gloucester.

THE PAINTING OR STAINING OF MARBLE

to Cosmo prince of Tuscany, when in Oxon.⁴ As I have suggested elsewhere⁵ it is possible that this discovery of Byrd's may have been assisted if not prompted by the young Christopher Wren, for in 1654 John Evelyn, the diarist, was dining with Dr. Wilkins, then Warden of Wadham and a prime mover in the promotion of the Royal Society, and during the course of the evening he was shown by young Mr. Wren 'a piece of white marble which he had stained with a lively red, very deep, as beautiful as if it had been natural.' Henry Oldenburg, first secretary of the Royal Society, to whom, as editor, we owe the foregoing quotations from the *Transactions*, was also in Oxford during the years 1656 and 1657 and his interest in Byrd's successful invention may arise from his knowledge of the experiments which must have been going on in the Holywell yard during these years.

Whether Kircher's receipt was tested by any 'ingenious artists with conveniences for making the attempts' we do not know, but in 1747 the receipt was reviewed again, this time in the *Gentleman's Magazine*.⁶ Here the passage in question is in the form of a letter signed 'J.B.' and the writer says :

'There having been very great admiration expressed by many, who have seen mother of pearl, Egyptian and other stones, stained with landships (*sic*), figures, and even portraits, so as to appear to be in the substance of the stone, very neatly executed by a German ; I was pleased in finding an old receipt containing the secret by which this work is or probably may be effected ; I send it you, not doubting but it will be agreeable to your ingenious readers, and that your publishing it may occasion the improvement or revival of the art, if lost to the English.'

He then gives Kircher's receipt and concludes :

'Mr. Bird, a stone-cutter at Oxford, practised this art before the year 1660 ; several pieces of marble so stained by him are to be seen in Oxford ; several others being shown to K. Charles II . . . they were broken in his presence, and found to correspond thro' the whole substance.'

The writer is clearly quoting from the *Philosophical Transactions* and it is significant that he does not directly attribute the receipt he quotes to Mr. Bird.

To this letter the editor appends a note :

'We suppose that the German mentioned is one Miller⁷ who has beautifully engraved some plates in the history of Africa and China.

⁴ Wood, *Life and Times*, ed. Clark, I, 241.

⁵ *Oxoniensia*, XIV (1949), 63.

⁶ XVII (1747), 599.

⁷ Probably John Miller, 1715?-1790, an engraver from Nuremberg who studied under J. C. Weigel and M. Tyroff. He did engravings of plants, etc., and also illustrations for *Marmora Oxoniensia* by Chandler in 1763, and several engravings for Natter's treatise on *The Ancient Method of Engraving on Precious Stones*, 1754. He came to England with his brother Tobias who was also a draughtsman.

MRS. J. C. COLE

As for staining marble, that art is not lost among us, for we have been lately informed, that the wife of Mr. Long, stone-cutter at Bowbridge, Essex, performs it in a very curious manner.'

The next reference I have found to Kircher's receipt is contained in John Walker's *Oxoniana*⁸ published in 1809. Here he refers to the marbles which Byrd showed to Charles II and gives 'the following curious old recipes' (namely Kircher's) said to contain the method of preparing the liquor to be used for this purpose. Here then we have Kircher's receipt definitely, though I think wrongly, attributed to Byrd.

Were Kircher's the only receipt for marble staining extant we might regretfully conclude that we were no nearer understanding Byrd's method than before its appearance, but it so happens that another receipt has survived. This is given simply and without comment in the *Philosophical Transactions* for the year 1700.⁹

⁸ MODUS COLORANDI MARMORA

1. Marmor debet esse politum sine omni macula, durum ut Ignis vim eo melius sustineat, ideo Alabastrum his usibus minime Idoneum.

2. Ad Aperiendos poros igne opus est tali tamen gradu ne Igniatur, nam tum colores Comburentur nec nimis tepido, nam etsi tum Colores recipiat, recepti tamen minus figuntur nam marmor etiam frigidum imbibet aliquot colores sc. Crocum *Stone-blue* pro Colore coeruleo, verum hi colores facillime per minimum (*sic*) calorem igne dissipantur ideo is ignis fit Gradus qui sufficiat liquori marmori infuso leniter ebulliendo.

3. Menstrua varia sunt, pro diversitate materiae dissolvendae, Lixivium ex Urina equina factum cum cineribus clavellatis, part 4. & calcis viv, part 1. (N.B. Urina Canina prestat equinae.) Item Spiritus Vini, Lixivium Comune, Vinum & quaedam Oleaginosae.

4. Colores qui cum vehiculis inducuntur hi sunt. 1. *Stone-blue*, in spirit. vin. vel lixivio calcis viv solut. 2. Lackmus in lixivio vulgari. 3. Crocus vel Sappgreen solutum cum lixivio ex Urina & Calc. viv. vel in Sp. Vini. 4. Vermilion vel Cochineel dissolut. ut supra. 5. Sang. Draconis in Sp. Vini S. Art. solut. 6. Brasilium lignum in Sp. Vini solut. 7. Radix Alcannae cum oleo Terebinth Extract. nam in nullo alio menstruo nec Spiritu vini nec in lixivio solvitur. 8. *Sappgreen the less* mixt. & dissolut. in sp. Vini vel lixivio calc. viv. ut antea. Aliud Genus Sanguinis Draconis est quod vocatur Lachrima Sanguinis Draconis, quod cum Urinis mixtum gratum satis pro ducit colorem, verum aegre acquiretur, melius Colores cum Urina mixti finem non eludunt.

5. Colores qui sine vehiculo illinuntur hi sunt. 1. Sang. Draconis optime mundat. ad Colorem rubrum. 2. Gumm. Gutt. ad Col. flav. 3. Cera virid. ad Color. virid. 4. Sulphur, pix, Terebinth ad Colorem brunum requiritur tantummodo ut Marmor rite ferveat, & ita Colores grumatici fricando inducuntur, quod experientia docebit.

⁸ III, 55-6.

⁹ xxii, 735.

THE PAINTING OR STAINING OF MARBLE

Hi Colores vel facile vel difficulter eluuntur, ruber Color cum oleo Tartari per diliquium intra 26 horas extrahitur sine ulla politurae jactura, Brunus cum aqua forti intra quartam horae partem sed laesa politura.

Pro Colore Aureo sic fac R. salis armoniaci, Vitrioli albi flor. virid. aeris, pulverisentur subtilissime.'

That this became a real mason's formula, tested by experience in the workshop, is demonstrated by the discovery of the following rough translation or paraphrase of it, with some small omissions and additions, in the account books of a mason in High Wycombe, one Thomas Watts, c. 1775¹⁰:

'COLOURING of Marble

and in order to Succeed in it the pieces of marble on which y^e Experiment is tried must be well Polished and Clear from the least Spot or Vein Y^e harder the marble is the better it will Bear heat Necessary in y^e Operations Upon, heat Is Always Necessary for y^e Opening of Pores In Marble so as to Render it fit to Receive y^e Coloures but y^e marble must never be made Red hot for then Y^e Texture of y^e marble it Self is Injured and Y^e Colours burnt and Loose Their Beauty too Small a Degree of heat Is as Bad as too Great for in this Case tho Y^e Marble Receives y^e Colour it will not be fixed in it nor Strik Deep Enough Some Colour Will Strike Even Cold but is never So well as When a Good Degree of heat is Used Y^e Proper Degree is that without making Y^e Marble Red will make Y^e Colour Boyl upon Its Surface Y^e menstruums Used to Strike in y^e Colours must Vearied According to Y^e nature of Y^e Colour to be Used a Lixivium made with Horses or Dogs Urine with four Parts Quick Lime & one Part pot ashes is Excelent for Some Colours Common Ley of Wood Ashes Does Verely Well for Some others for Some Spirits of Wine is best and finiley for others Oily Liquors or Common White Wine Y^e Colours that heave been found to Succeed best with Y^e Peculiar Menstruums Are these Stone Blue Dissolved in Six times Y^e Quantity of Spirits of Wine or of Y^e Urinous Lixiviaum and that Colour that the Painters Call Litmose Dissolved in Common Ley of Wood ashes & Extract of Saffron and That Colour made of buckthorn berries and Called by Y^e Painters Sap Greean both Succeed Well Dessolved in Urine and Quick Lime Tolerably Well in Spirits of Wine Vermilion & a fine Colour Power Cochineal Succeed Also Very Well in Y^e Same Liquor Dragons Blood Succeeds Very Well in Spirits of Wine as Doth also a Tincture of Log wood in the Same Spirits Alkanet Root Givs a fine Colour but Y^e Only Menstruum to be Used for this is Oil of Turpentine for Nither Spirits of Wine nor any Lixvium Will Do With it There is another kind of Sanquis Dragonis called Dragon's blood in Tears Which mixed With Urine alone Givs a Very Elegant Colour Phi. Trans. No. 268 besides these mixtures of Colours and menstruums there Some Colours to be Laid on Dry and un mixed these Are Dragons blood of y^e Purest kind for a Red Gamboge for a Yellow Green, Wax for a Green, Common Brimstone Pitch and turpentine for a brown Colour Y^e marble for these Experiments must be made Considerable hot and Y^e Colours are to be Rubd on Dry in Y^e Lump.'

¹⁰ The business is now in the hands of a firm called Harris, to whom I am indebted for permission to copy the extract from Watts's account book. I have copied it verbatim.

MRS. J. C. COLE

The entry occurs quite haphazard among the ordinary entries of accounts and was clearly copied down either because it was already, or was intended to be, of use. It gives a reference to the *Philosophical Transactions*.

Can we connect this receipt with Byrd? In the year 1667 we find among the entries for the Poll Tax in the City of Oxford the names of two journeymen, Richard and Thomas Wood, employed by the stonecutter William Byrd. In later life Thomas Wood built the old Ashmolean Museum in Oxford and carved the marble wall monument to Dr. Junius in the cloisters of St. George's Chapel, Windsor. Richard became a successful local mason and a member of the Oxford City Council.¹¹

The relation between Byrd and the Woods seems always to have been close and in the building accounts of the Ashmolean we learn that Wood erected there a stained marble chimney piece (now lost), no doubt from the formula supplied to him by Byrd which was presumably a closely guarded trade secret. The date of William Byrd's death is uncertain, but it was probably about 1690. Thomas Wood died not later than 1695 and Richard Wood in 1700. None of them left an heir to succeed them in their work and the Holywell Yard passed into other hands.

In these circumstances the date of the publication of the second receipt for marble staining becomes significant, for it is also the year of Richard Wood's death, when his widow, perhaps having no further use for his formula, may have been induced to make it public.

Another point which at first seems to present a difficulty, upon consideration further indicates the genuineness of this ascription. The Latin receipt opens with a warning that alabaster is a less suitable medium for staining than other softer marbles and this clause is left out in the working mason's later translation. Now William Byrd's fondness for alabaster was almost anachronistic¹² and he continued to use it for his monumental work many years after it had passed out of common fashion. Surely the emphasis here laid on its rejection for purposes of staining comes more naturally from one for whose work it was an accepted medium, since in most yards of that period it seems unlikely that it would receive such prominence in any receipt.

The editor of the *Transactions* of 1665 mentions works in stained marble by William Byrd in Oxford, London and elsewhere. The writer in the *Gentleman's Magazine* of 1747 mentions, perhaps accidentally, only examples in Oxford, but it may be that by that date the London examples had been destroyed, forgotten or fallen into decay. Many of them were probably chimney pieces. To-day

¹¹ See my article in *Oxoniensia*, xiv (1949), 65 ff.

¹² *Ibid.*, 73. The eighteenth-century mason probably left it out of his translation as apparently useless.

THE PAINTING OR STAINING OF MARBLE

as far as is known to me, only a very few specimens of marble staining that are presumably from Byrd's hand survive and these are all outside the City itself.¹³ In these few examples the only colours which seem to represent a definite stain and not a paint are red, a dull green and a deep blue—all colours specifically mentioned as satisfactory in the foregoing receipt.

If the receipt published in the *Philosophical Transactions* for 1700 can with some probability be claimed to be Byrd's, there follows naturally another question. Did Byrd, as seems probable, originate his discovery in Oxford, and if so was the original notion of it suggested to him there either by Wren or some fellow mason like Jackson who worked a good deal with marbles, or did Byrd on the other hand bring the germ of his discovery with him from Gloucester and merely perfect the process in Oxford?

The evidence for this alternative is very slight, but perhaps worth a little consideration. We know that Walter Nicholls, Byrd's master, left in his will a bequest to 'his loving friend John Campion' and his wife. John Campion was a well-known local painter/stainer who did a good deal of contemporary work in Gloucester and it is natural to suppose that the young Byrd learned some of the elements of painting from this source. Did he also take part in any experiments in marble staining during his apprenticeship? We do not know, but it is interesting to notice that some time later this rare art crops up again in Gloucestershire.

Mendes da Costa, who collected notes on various literati, 1747-1788, mentions a 'Mr. Robert Chambers, a mason, who painted arms, flowers, fruits, Hebrew, and other characters on marbles; see my paper to Royal Society (not printed). A very curious person he was, a Gloucestershire man, and about 74 when he died. He painted or stained on marble several roses, exquisitely well, for me; and the blazoned arms of the present Duke of Norfolk on a marble slab for his Grace.'¹⁴ Chambers, of course, may have acquired his knowledge otherwise than locally, but it would be both interesting and instructive to discover if any intermediate examples of marble staining exist in Gloucestershire, and if so to which masons, if any, they can be attributed.

¹³ *Oxoniensia*, l.c.

¹⁴ *Gent. Mag.*, 1812, I, 517. For further light on Chambers see R. Gunnis, 'Signed Monuments in Kentish Churches', *Arch. Cant.*, LXII (1949), 64, pl. III, and A. Graves, *The Society of Artists of Great Britain . . . 1760-1791*, 1907, pp. 54-6. Between 1761 and 1783 Chambers exhibited a number of specimens of stained marble ranging from small objects such as fruit and flowers to chimney-pieces and tombs.