

IV.

THE PIGMENTS USED IN PAINTING "THE ROSSLYN MISSAL" IN THE ADVOCATES' LIBRARY, AND THE CELTIC PSALTER, D. p. 111, 8, IN THE LIBRARY OF THE UNIVERSITY OF EDINBURGH. BY PRINCIPAL LAURIE, M.A., D.Sc., P.R.S.E., HERIOT-WATT COLLEGE.

Before describing the pigments used in painting these two illuminated manuscripts it is necessary to consider shortly the pigments used on early Byzantine and early Celtic manuscripts. The earliest Byzantine manuscript in the British Museum which is illuminated is supposed to be of the sixth or seventh century, and consists of two leaves from a Gospel which are entirely covered with gold-leaf paint (Add. 5111, pp. 10, 11, Brit. Mus.). The pigments with which this MS. is painted are ultramarine from lapis-lazuli, a green probably malachite mixed with a little blue, and a wonderful rich-coloured lake.

Two of these pigments require special consideration before we go further.

To deal first with the lake pigment. While it is incapable of proof, the probabilities are, judging from the tint, that this pigment has been prepared from the murex shell-fish from which the Tyrian purple was obtained. Pliny gives a recipe for the preparation of a pigment, and I do not know of any other dye which was known at this time and could give just this quality of colour and also be so permanent. A madder, the only other possible dye, if prepared by the old Egyptian recipe with lime and gypsum, gives a reddish-brown lake. Whether this be the murex colour on this particular parchment or no, there can be no question that on later MSS. lakes prepared from this dye were used as pigments; while in other cases, both in Byzantine and Carolingian and early European MSS., the whole parchment was dyed and the writing done with silver and gold letters.

The other pigment which requires special discussion at this stage is ultramarine. The preparation of ultramarine from lapis-lazuli is not an easy operation. If the lapis-lazuli is ground to a fine powder and stirred up with water and an attempt made to separate the ultramarine by floating, a very imperfect separation results, the ultramarine still containing particles of the colourless minerals present in the lapis-lazuli, and the outcome being a dull greyish blue.

Apart from the tint of a specimen of ultramarine painted out on vellum, examination under the microscope enables us at once to judge

of the success of its' preparation, the poorly prepared specimens being largely composed of colourless minerals. The methods of preparation gradually improve through the centuries, but it is not till we come to the MS. of the monk Theophilus that we get a proper recipe for its preparation, and it is not till the end of the twelfth century that we find the MSS. adorned with a perfect and splendid ultramarine. The method of preparation finally devised and which we find repeated again and again with little variation in recipes for pigments, was to mix the finely ground lapis-lazuli with a mixture of resin, oil, and wax. Keep it for some days and then knead and work the lump of wax and resin under warm water with a very little wood ashes dissolved in it, when the ultramarine separates from the lump of resin and settles in the bottom of the basin. This method corresponds very closely to some of the modern methods of separating ores by means of emulsions of oil and soap. The improvement in its preparation was very gradual, and can be traced century by century in European MSS.—Italian, French, and English; but the Byzantine monks refused to alter their methods, and the same dull imperfectly prepared ultramarine is to be found on MSS. of the thirteenth century.

Besides ultramarine and the Tyrian purple we find—orpiment for yellow, vermilion for red, and malachite, or sometimes a dull earthy green difficult to identify, for green. Let us now leave the Byzantine MSS. and examine the earliest of our Celtic illuminated MSS., the Lindisfarne Gospels of the eighth century.

The story of these Gospels and the way in which they came to be preserved through the centuries is so well known as to require no repetition here. We are interested for the time being in the pigments used to produce these gorgeous decorations. The pigments have been laid on with a gum of some kind that has produced a very shiny surface. It would be of great interest to know what this medium was, as the excellent preservation of the painted surface is due to its free use by the illuminator. It might be white of egg, cherry-tree gum, gum arabic, gum tragacanth, or some blending and mixing of these. The shiny surface makes it somewhat difficult to identify the pigments under the microscope, but there can be little doubt that they are—red-lead (in place of vermilion), orpiment, malachite, and a purple lake or dye, differing in tint from the Byzantine purple but quite different from the tint of lakes prepared from other dyes.

Now, we know that the Irish monks knew how to prepare a purple from the *Purpura lapillus*, a shell-fish found round our coasts, and we have the authority of the Venerable Bede for stating that the recipe was obtained from the monks of the East. Some authorities claim that

the use of this shell-fish as a dye in Ireland was known in prehistoric times. This might well be and yet the successful preparation of a pigment suitable for painting be unknown.

Evidently, except for the substitution of red-lead for vermilion probably from some difficulty in obtaining vermilion, the same palette was used as that common in the East.

The ultramarine, as is to be expected at that early date, was badly separated from the other minerals in the lapis-lazuli.

And now I propose to pass over several centuries and describe the pigments found on the Rosslyn Missal. This missal was reprinted with great care by the Rev. Hugh Jackson Lawlor, D.D. (Henry Bradshaw Society publications, vol. xv.), and he comes to the conclusion, on evidence that it is unnecessary for me to repeat here, that it was probably originally the property of the Cathedral Church of St. Patrick at Down, and was a copy of an earlier missal belonging to the Benedictine House of St. Werburgh at Chester, and the date is probably late thirteenth or early fourteenth century. He suggests it may have been carried off by the followers of Edward Bruce in 1316. We find it in the library of Rosslyn Castle at the close of the sixteenth century, and it was bought by the Faculty of Advocates in 1697 for the sum of 3s.

The beautiful and dainty decorated letters down the margin of the MS. are outlined in black, and are tinted with four pigments, vermilion, orpiment, ultramarine, and the shell-fish purple. Two of these pigments require a special discussion. In the first place, the orpiment has got rubbed off and is now poor and dull, but is a variety of orpiment which I have found on all the MSS. I have examined of supposed Irish origin and is different to the orpiment found elsewhere. It is a flaky variety, which when first put on must have closely resembled gold paint, judging by the few flakes that remain here and there. Where it was obtained from I do not know.

The next pigment is the ultramarine. This is still the badly separated variety we found on the seventh and eighth-century MSS., and we find therefore these Irish monks following the Byzantine tradition and ignoring entirely the developments in the painting of vellum which had taken place in Italy, France, and England. Let us take for comparison the "Ruskin Bible" in the Advocates' Library, an English thirteenth-century MS. Certain pigments are inevitably the same, but the beautifully prepared ultramarine, and the lake, probably prepared from lac, give quite a different colour scheme. It cannot be because they were unaware of the fine ultramarines used in the English monasteries: they must have preferred, as a pious tradition probably, the dull ultramarine and the purple dye from the shell-fish.

It is of interest to compare this Irish Psalter with another Irish Psalter also of the thirteenth century in the possession of the British Museum (Add. MS. 36929).

Here again the pigments are—vermilion, orpiment, badly washed ultramarine, and the purple from the shell-fish. There is also here a green which we find very largely replacing malachite from an early date up to the beginning of the fifteenth century, which was apparently prepared by dissolving verdigris in a hot pine balsam. No recipe for this green appears in any monkish MS. of colour recipes I have examined, the first known recipe being published by the physician De Mayerne in the seventeenth century.

Having now dealt fully with the pigments on these two Irish missals, let us next look at the pigments on an earlier Celtic MS., the Psalter in the Edinburgh University Library, D. v. 111, 8, on which the designs are obviously Celtic and the script Irish, but the place of origin unknown beyond that it was in Aberdeen in the sixteenth century. Professor W. M. Lindsay assigns it to the eleventh century.

There are some very interesting designs on the margins of this Psalter—an elongated grotesque animal form which seems to resemble the elephant symbol found on Pictish stones in Scotland, and a fish ornament resembling the fish symbol found on these stones. Miss Borland suggests the possibility of this connecting the book up with Pictland. However that may be, we have here again the traditional pigments: red-lead in place of vermilion as in the Lindisfarne Gospels, the Irish variety of orpiment, the transparent copper-green, the badly washed ultramarine, and the shell-fish purple.

This MS. has another interesting peculiarity. One page seems to have been painted over at a later date with gold letters on a blue-grey back-ground, only the Celtic design still showing on the margins.

Miss Borland describes this page as an imitation of late English eleventh-century work. The gold paint with which these letters have been painted is of extraordinary interest. There is no difficulty in recognising gold paint prepared by the grinding of gold leaf under the microscope. This gold is different. It consists of little rounded and kidney-shaped particles obtained as the fine gold dust from river-washed gold. I have found this same variety of gold paint on an eighth-century Canterbury Gospel (I. E. vi.), on King Edgar's Charter to Winchester, 966 (Vesp. A. viii.), and on a Canterbury Psalter, 1012-1023 (Arundel 155). I do not find it at any later date, but that is no proof that it may not have been used at a later date in Scotland.

There remain two interesting MSS. still to be referred to.

The MS. known as the Rochester MS. in the Advocates' Library. This

is an English twelfth-century MS., but it contains one initial letter which has been painted with the Irish pigments. This raises interesting speculations as to the possibility of the visit to the English monastery of an Irish monk with his paint-box, and his being allowed to paint one initial letter.

Another interesting MS. is the Hyrdmanniston Breviary (Adv. Lib. 18, 2, 13A), which is supposed to be late thirteenth century and to have come from a northern monastery. There are only two pigments, red and blue, and the blue is the badly separated ultramarine which we associate with Irish MSS.

While it would be necessary to examine a much larger number of Irish MSS. to establish a universal conclusion as to their methods, there is every indication of a different "tradition just as we find on the Byzantine MSS. persisting through the centuries to the English, French, and Italian MSS.

The early English MSS. may show the Byzantine palettes, such as the late eighth-century Canterbury Gospel (I. E. vi.) in the British Museum, but the differentiation soon begins between the two traditions. I have recently come across two much later interesting examples of the persistence of tradition in the painting of religious subjects. One was a Virgin and Child on a gilt panel, obviously Greek, which the British Museum authorities place in the seventeenth century, yet the pigments used would not be found later than fourteenth century on a European MS. The other was a little book on vellum containing paintings of the costumes of all the religious orders, the product of some French monastery, and obviously from the costumes of the eighteenth century, yet the pigments used are fifteenth-century pigments.

Another interesting speculation suggested by these inquiries is the source of supply of the various pigments. The most probable source of supply for lapis-lazuli, for instance, are the famous lapis-lazuli mines at Badakshan on the Kokcha, a tributary of the Oxus, which have been open for many centuries and are described by Marco Polo. If this is the source of supply of the raw painting pigment on illuminated MSS. all over Europe from the seventh to the close of the fifteenth century, it certainly suggests that in spite of wars and changing empires and dynasties the great trade routes of the world remained open and undisturbed.

MONDAY, 8th January 1923.

**GEORGE . MACDONALD, C.B., F.B.A., LL.D., D.LITT.,**  
in the Chair.

A Ballot having been taken, the following were elected Fellows:—

- Lieut.-Colonel W. BOYS ADAMS, 12 Trevor Square, Knightsbridge,  
London, S.W. 7.  
The Right Hon. LORD FORTEVIOT of Dupplin, Dupplin Castle, Perth.  
JOHN GARDNER, Woodend, Houston.  
ROBERT G. S. MACKEGHNE, Artist, 6 Westbourne Gardens, Glasgow, W.  
Miss MORAG MACLAGAN, 28 Heriot Row.  
ALAN L. MENZIES, W.S., Larchgrove, Balerno.  
KEITH STANLEY MALCOLM SCOTT, M.B.B., B.Sc., Captain R.E.T.A.,  
27 Osborne Road, Newcastle-upon-Tyne.

The following Donations to the Museum were intimated and thanks voted to the donors:—

(1) By D. HAY FLEMING, LL.D., F.S.A.Scot.

Plaster Cast of fragment of carved panel of altar tomb at St Andrews, recently returned to St Andrews from York Museum.

(2) By GEORGE MALCOLM, 8 Victoria Terrace.

Cast Iron panel of grate, 23 inches by 10 $\frac{1}{4}$  inches, bearing the figure of Justice, and the date 1683; believed to have come from an old house in South Queensferry.

(3) By the Rev. D. G. BARRON, D.D., F.S.A. Scot.

Charm in the form of an irregularly shaped waterworn pebble, 4 $\frac{1}{4}$  inches long, 2 $\frac{1}{8}$  $\frac{5}{8}$  inches in greatest thickness, with natural perforation on one side, still retaining the piece of tape by which it was suspended; found by the donor, over thirty years ago, hanging on the bed of an old fisherwoman in Stonehaven, who called it a "mare stone," to keep away nightmare.

(4) By VICTOR T. HODGSON, F.S.A. Scot., F.S.A.

Baton of the Secretary of the High Constables of Calton, of ebony, 6 inches long, f inch in diameter, having a silver cap at both ends, and encircled at the centre by a band of the same metal. On one end are the arms of George II. and on the other those of the burgh of Calton—a triple tower on a rock—with the number "2," while on the central band is engraved "SECRETARY NUMBER 2 CALTON."

(5) By JAMES L. ANDERSON, F.S.A. Scot.

Standard Yard Measure of the chapmen of Fife, Parish of Ceres.  
(See subsequent communication by the donor.)

(6) By CHARLES B. BOOG WATSON, F.S.A. Scot.

Sixteen Gun Flints, four Chipped Flints, and two Flattened Lead Bullets, found in 1919 at the foot of the rock below Edinburgh Castle, near the Well-house Tower, by the donor.

It was announced that there had been acquired through the King's and Lord Treasurer's Remembrancer:—

Earthenware Jug and forty-five Foreign Sterlings found in it, discovered at Auchenbart, Darvel, Ayrshire. (See subsequent communication by Dr George Macdonald.)

The following Donations of Books to the Library were intimated:—

(1) By W. DOUGLAS SIMPSON, M.A., F.S.A. Scot., the Author.  
Huntly Castle. Huntly, 1922.

(2) By THOMAS SHEPPARD, M.Sc., F.G.S., F.E.G.S., F.S.A. Scot.,  
the Editor.  
Hull Museum Publications, No. 128.  
Quarterly Record of Additions, No. lxiii.

(3) By WALTER J. KAYE, B.A., F.S.A. Scot., the Author.  
Records of Harrogate. Leeds, 1922. 8vo.

(4) By ROBERT FINLAYSON, Town Clerk of Arbroath, the Author.  
The Freedom of the Burgh and Scottish Life in the Olden Time.  
"Propter Libertatem," or some Local Historical Seals.

(5) By THE PRESIDENT AND COMMITTEE OF THE RYMOUR CLUB.  
*Transactions*, Part ii. vol. iii.

(6) By Captain H. W. MURRAY, F.S.A. Scot.  
Old Base Metal Spoons, with Illustrations and Marks. By F. G.  
Hilton Price.

(7) By the Rev. F. HARRISON, M.A., F.S.A. Scot., the Author.  
The West Choir Clerestory Windows in York Minster.

The purchase of the following book was also intimated:—  
*Inventory of the Historical Monuments in Essex*. Vol. iii. 1922.

The following Communications were read:—