JOURNAL OF STAINED GLASS

From its inception, the BSMGP has remained committed to the publication of its annual Journal, now known as the Journal of Stained Glass. This remains the only journal of its kind in the world, devoted to the publication of in-depth scholarly articles of wide-ranging interest to those with an interest in stained glass of all periods. Many of the early issues contain fascinating material of continuing value to those working in the field — articles on technical issues, recipes for paints, stains and enamels, craft advice and personal observations from some of the past masters of the profession. Fellow of the Society, Rodney Bender, is making a selection of extracts from some of the most interesting of these for publication here and in future newsletters, enabling the practitioners of today to benefit from the expertise of the members of the past. The Journal remains an invaluable source of information and it is hoped that this series will make some of its past treasures more widely available.

❖ *Sarah Brown, Journal Editor 1988-1998*

We are currently creating a searchable database of the Journal contents for our webpages, and hope by the time of the next newsletter to be able to report that it is up and running. Over the past year, our own library copies of the Journal have been conserved and rebound, under the supervision of our Librarian, Michael Peover. Photocopying facilities are available at Blandford Street where the library is housed, and for those who cannot easily get to London, Michael offers a photocopying service at £5 per article. Rodney Bender made the brilliant suggestion of republishing selections from old Journals to make them available to a new generation of members. Over the coming issues of the newsletter, we shall be publishing 'A Manual of Glass Painting'. Rodney writes: "I am always impressed by the wealth of technical information contained in early issues of the Journal and I thought it might be useful to publish selected extracts in the newsletter. The 'Manual of Glass Painting' which appeared in two parts, the first instalment in 1956 Vol.12, is just one such example. It is not merely of historical interest, and I am sure it will be of practical use to members."

From 'A MANUAL OF GLASS PAINTING'

British Society of Glass Painters' Journal Vol XII No. 2 1956-7 ppII7-II8

Generally speaking a glass painting is executed in the following way. The glass is laid upon the drawing and the outlines are traced on it. When dry it is given a flat coat of shading colour out of which the lights are gradually removed with a dry brush, and the highest lights taken out with a pointed stick or quill. The silver stain is then applied where required on the back of the glass, and lastly the work is fired in the kiln.

But except in cases where a very delicate treatment is required, a glass-painting executed in this simple way would appear thin and poor. In particular the shadows would appear weak and flat, and the design would lack modelling, as there is always a slight loss of depth due to the firing. Ancient work, from the time of Theophilus, always shows three distinct tones or depth of tint, obtained in various ways.

In order, therefore, to give more contrast and greater range from light to dark, one of the following methods is employed.

(a) the work is traced, painted and fired, and then re-painted as before so as to gain more depth and contrast. But this is looked upon as a disadvantage by glass-painters, as not only does it detract from the spontaneity of the execution, but the yellow stain suffers if re-fired, and the glass tends to lose its brilliancy and sparkle. Moreover the stick-lights which have been removed in the first painting are covered over or blocked up.

(b) The work having been traced, the shadows are first painted on the bare glass, and a thin final matt is passed over all, out of which the highest lights are removed.

(c) The glass can be traced, then given a stipple or matt of medium depth and the lights are brushed out with dry stiff brushes (scrubs) as mentioned above. It is then given a very thin coat of some oily medium such as oil of tar and turps, and the shadows are painted into this with oil colour, i.e. colour mixed with turpentine and fat oil of turps.

Painting glass

Appliances Required.

Easel. This is a sheet of glass either in a wood frame or not on which the pieces of glass are stuck with wax so that they can be painted by transmitted light up against the light. It is generally a piece of second-hand plate glass about the size of an Imperial drawing board. But a piece of 24 oz. sheet in wood frame is more easily handled and not so heavy, and can be bought for less than 6d. per square foot. A sheet of 24 oz. measures, 5ft. 3in. by 3 ft. 6 in. and will cut up into three handy-size easels each 21 in. wide. They should be fixed into wood frames and tissue or tracing paper stuck on the back to catch and hold the light. A wood or iron bar is fixed from side to side above the bench at the required height for the easel to lean against.

Handrest. This is used to support the wrist whilst the glass is being traced or touched up in the hand. It consists of a piece of wood about 1/2" thick, 2 in. wide and 18 in. long supported on two little blocks of wood at each end to raise it 2 in. or so from the bench. It should have a hole at one end to hang it up by.

Slabs. These are generally cut from old or second-hand quarter inch plate. About 12 in. square is a convenient size. They should be ground with coarse emery or sand and water. If emery cannot be obtained, Wellington knife polish, which is the same thing, can be used instead.

Plant saucers. These are the ordinary 6in. red earthenware plant saucers bought from a seedsman or florist. They are soaked in a bucket of water and used to cover the "colour" on the slabs to prevent it drying up during the night. If the edge is ground down slightly on a slab with emery and water, they will fit more closely so as to exclude the air.

Gallipots are required to hold turpentine, etc. The small glass jars in which meat paste is sold do very well.

[cont.]

The following text has been circulated to all those present, and agreed as a true account of decisions taken. Most of the discussion is necessarily omitted, but in fact considerable debate centred on the issue of encouraging members to apply for Associateship. (RC)

On the subject of Fellows, it was accepted that under the present Articles Fellows were alone responsible for seeking out, proposing and electing new Fellows from within the existing Associates. They are also able to propose non-members of the Society for this professional qualification.

On the subject of Associates, it was agreed:

That while the Society would like to see more Associates within the membership it was not to be achieved by lowering entry standards

That the necessity of obtaining a proposer and seconder for Associate applications should be abolished. The Constitution Committee should review the Articles and Bylaws to determine how this can be most efficiently achieved.

That the present application form was confusing. It will be redrafted by Ginger Ferrell assisted by Kathy Shaw. This new form will be further modified when changes to the application procedure have been effected.

To establish a more permanent Selection Committee than the present arrangement.

That the application can permit a wider range of techniques. It will invite the applicant to demonstrate his/her abilities in related aspects of design in other media, such as competence in life drawing. The 50% rule on architectural glass commissions will be reviewed.

The meeting considered the proposal that the distribution of seats on Council among the elected members should be changed from the present six Fellows, three Associates, two Ordinary to reflect the weight of their relative contributions. The majority of those present rejected this suggestion.

It was agreed that the names of all current paid-up Fellows and Associates should be published annually in the Journal.

It was the view of the meeting that the creation of a seat on Council for a student members would not have the intended effect of benefiting the student membership in general as opportunities for communication among them would be limited.

It was agreed that the Society should make every effort to support workshops offered by the colleges, particularly where at least one of our senior members (Fellow or Associate) is involved. Such support would certainly include publicity in the Newsletters. The Society would expect senior members to recognise their obligations to the craft by passing on their experience and advice to students. Colleges should be encouraged to keep the Secretary in her capacity as Newsletter Editor informed of their programme of workshops and to invite the participation of our senior members.

The majority of those present favoured retaining the present name of the Society, reflecting as it does Britain's rich heritage of painted glass. The issue was rather one of embracing new techniques within the present Society.

St Stephen window by A.J. Davies

Roy Albutt, a BSMGP member researching AJ Davies writes: "Archibald John Davies (1877-1953) was born in London but spent his formative years in Birmingham. He attended the King Edward VI Camp Hill School for Boys from 1887 to 1893, before becoming a student at Birmingham Municipal School of Art.

The School of Art was an important force in the Arts and Crafts Movement, and Davies specialised in stained glass under the influence of Henry Payne. By 1905 Davies had set up his own studio in Moseley, Birmingham. At this time he was also teaching at the School of Art while continuing his own studies as an advanced student. In 1906 he established a studio in the premises of the Bromsgrove Guild.

At Bromsgrove he produced more than two hundred windows for British churches, including Worcester, Hereford and Bradford cathedrals. In addition many windows were sent abroad particularly to Canada and South Africa, a Fellow of the BSMGP, worked in his Bromsgrove studio until his death."

The Bromsgrove Guild - An Illustrated History edited by Quintin Watt ISBN 0 9509471 6 4 is the first major work on the subject. Despite some errors in the stained glass section, such as suggesting that the glass by Whall at Brockhampton could be the work of Payne or Davies, and an almost certainly incorrect attribution of a window at Tardebigge to Amy Walford it is a worthwhile volume, advancing our knowledge of the work of the Guild, and it makes interesting reading. It is available at £13.50, including postage, from Mr J C Weston, 20 Sunningdale Road, Bromsgrove, Worcestershire B61 7NN. Cheques should be made payable to 'The Bromsgrove Society'.

The Bromsgrove Guild Research Project would like to hear from you if you can help them with anything about the Guild which has been omitted from their book. They are particularly keen to trace descendants of Walter Gilbert and William McCandlish, gain access to any written records relating to the Guild - letters, receipts, invoices, advertisements, press cuttings etc., identify the locations of Guild work in Britain and overseas and obtain photographs of Guild commissions and personnel.

From 'A MANUAL OF GLASS PAINTING'

As reported in the last newsletter, the intention is to reprint articles of interest from Journals of long ago, to make them available for the current generation of members. The idea was Rodney Bender's, and we continue the serialization of A Manual of Glass Painting *which he selected as being of one of a number of items which would be of particular interest to current members.*

Painting in Water

"Painting in water" does not imply water only. The addition of other ingredients such as gum, is understood.

Materials Required

Tracing Brown or Black, and Shading Brown or Black. There are several varieties of these and it is purely a matter of personal preference which is used, and they can also be mixed. The difference in colour is actually of very little importance, as they are all merely opaque pigments used to block out the light in various degrees. The red shading colours made from red oxide of iron are better avoided on white glasses, as they tend to give a "foxy" or reddish tone under certain conditions of light. The red, brown or black vitrifiable pigment used for tracing or painting glass is always referred to as "colour". The word in this connection merely means "paint" and has no significance of "hue" or "tint".

Gum. Gum arabic is generally used, but gum senegal, which is harder and drier, and therefore takes longer to dissolve, is better. It comes in round tears about the size of the end of the thumb. About half of one of these should be broken up into powder with a hammer and put in a wide mouthed bottle such as a Bovril bottle, and just covered with water. Some workers add a few drops of eugenol (from oil of cloves) or ordinary oil of cloves, or keep a piece of camphor floating on the surface to preserve it, but it is better made up fresh when it goes thin. Liquid gum, sold in bottles for office use, is merely dextrine dissolved in water, and is useless for glass painting.

Acetic Acid. This is ordinary acetic acid (not glacial) and can be bought at any chemist's shop. In America it is known as "Acid Vinegar". It is used instead of water for mixing the colour, as it renders the gum insoluble and therefore waterproof.

Treacle (molasses). A touch of this on the end of a palette knife is sometimes added to the gum colour as it makes the "colour" flow more easily and not dry so quickly. This is useful when touching up scratches, pinholes, etc. in work which has been fired. A fine water-colour brush is used instead of a tracer for this work.

Beeswax and Resin These are melted together about half and half usually in a small iron pan kept for the purpose. But a tin pan is better as it is lighter and so does not fatigue the wrist, but it does not retain the heat so well. The mixture of resin and wax is commonly referred to as "wax" but it includes both.

The object of the resin is to make the wax sufficiently brittle so that the glass can be chipped off the easel after it has been painted. If insufficient resin has been added, the wax will hold so tenaciously to the easel, especially in hot weather, that the pieces of glass have to be prized off, and as a result are frequently cracked. The glass is chipped off the easel with an old palette knife cut off square like a chisel. An ordinary steel pen placed in the pen holder point inwards is handy for dropping the melted wax in the cracks between the various pieces.

General Instructions

The glass having been cleaned with a leather, the various pieces are laid out in their correct position on a cut-line drawing. They are then placed one or two at a time on the cartoon and the outlines traced. Those pieces which are too dark to see through are first traced on a piece of clear glass. The outline on the dark piece can then be obtained by placing it over this and holding it so that the light is reflected from a mirror or a sheet of white paper laid on the bench for the purpose.

Brushes

The brushes used for tracing are called "tracers", "pencils" or "writers," and they are made either of red sable or Camel hair. The latter has no connexion whatever with a camel, the word being a trade description for a brush made from the tail hairs of squirrels. It is purely a matter of preference which kind is used, but red sable tracers are more springy than camelhair. They can be obtained either in quill or tin. Those in quill are sized according to the quills of the various birds from which they are made, e.g. crow, duck, goose, etc. The two first are the sizes most useful for tracing. Goose quills are the same size as those used for pens for writing. The objection to tracers in quill is that they are very liable to split and the handles are too thin to grip and control. For those reasons the writers in tin sold for oil painting are more comfortable to handle. Nos.1 and 2 are the best sizes.
Tracing can be done in water, in acid, or in oil.

British Society of Glass Painters' Journal Vol XII No. 2 1956-7 pp. 118-120.
In the next issue, the section of the article on "Painting with water" concludes with details of instructions on tracing with water and acid, and shading with water. Oil Techniques will follow.

.. AND THOUGHTS ON OTHER MANUALS

Vital Peeters *Stained Glass* Crowood Press ISBN 1 86126 299X £14.99

A newcomer to the shelves last year was Vital Peeter's *Stained Glass* published by Crowood in their 'Arts of Crafts' series. Written for the beginner it is very positive in tone - 'you *can* do it' sort of thing. The first chapter, Looking at Glass, is unashamedly subjective, and is possibly best avoided by the serious student of stained glass history. The author has a very personal and informal style of writing, which may put the aspiring stained glass artist at his or her ease. He anticipates the kind of problems the student might encounter. The "Troubleshooting Tips" section tackles some of the questions a beginner might be too embarrassed to ask publicly, such as

"Q. *My window does not fit the window frame.*
"A. This situation should be avoided at all costs, however, if the problem has arisen these tips might be helpful....."

Very much project-based and lavishly illustrated, one of the selling points of this book has to be the attractive hard back and ring-binding, making it practical to use on the bench, and this at a reasonable price.

Once the basics covered by *Stained Glass* have been mastered, students might yearn for something richer and more subtle. However, it meets a need for the novice, identifying and explaining, as it does, some of the basic materials and techniques of the craft, and is very encouraging and well presented. A somewhat worrying aspect is that the informality of style extends into matters of health and safety. Though sensible advice is provided at relevant points throughout the book, the risks attendant on the use of hydrofluoric acid might be seen as potentially dangerously understated. Another niggle has to be that the very clear photographs suggest that unglamorous processes such as lead dressing and lead light cementing are not highly valued as integral parts of the realization of a stained glass design. The final chapter is the author's *Gallery of Stained Glass*, a personal selection of work by artists working in glass today. This is a book that will irritate some and inspire as many more.

From Theophilus onwards, many manuals of one kind or another have been produced for the student of practical stained glass craft. The last century saw the publication of Christopher Whall's *Stained Glass Work*. After many years in the 'gold dust' category, this book has recently become available again, in itself an indication of the level of interest in the craft of stained glass. It first reappeared in an American edition and then the 150th anniversary edition which is a complete facsimile of the 1905 original, with the addition of an Introduction to the life and work of Christopher Whall by Peter Cormack, a list of major windows, 14 new full-colour plates and a portrait of Whall himself with his family and pupils. For Rodney Bender, Whall's book ".....is superb as it wraps the craft in moral discourse. The technical information may be dated but the thinking behind it is sound. It is the 'Zen and the Art of Motorcycle Maintenance' of the stained glass world." Caroline Swash writes, "The best of the books remains Christopher Whall's enchanting .. *"Stained Glass Work"*. Praise indeed. Whall is also recommended reading at Sunderland University. One member of the Society is suspected of carrying a copy on his person at all times.

Though, strictly speaking, perhaps not a manual, at least one other member of the Society never ceases to extol the merits of Connick's *Adventures in Light and Colour* - Dave Morris would perhaps keep this volume in his pocket if it were not so large.

More recent classics are Patrick Reyntiens' *The Technique of Stained Glass*, London, 1967 and Paul San Casciani's, *The Technique of Decorative Stained Glass*, 1985. At Sunderland University, Reyntiens is required reading for students at the start of their course and, says Mike Davis, remains useful all the way through. Both Reyntiens' and San Casciani's books are out of print, but they are often available from Morris Venables. The latter book is due to be republished later this year - watch this space. Perhaps less well generally known, but highly regarded by Caroline Swash, among others, is Lawrence Lee's *Stained Glass* (OUP 1967) There are those who rate Albinas Elskus's *The Art of Painting on Glass*, New York 1980 as the best of the modern manuals specifically on glass painting. Mike Davis reports that some students have found it helpful, if a bit mechanistic in approach. "Another good book especially on painting," says Caroline Swash.

Morris Venables reports that Liddall Armitage's *Stained Glass* is also in constant demand. Eva Frodl - Kraft's *Die Glasmalerei: Entwicklung, Technik der Glasmalerei*, Vienna and Munich, 1980, is a sound introduction for the general reader - of German! - and, according to Sebastian Strobl, contains some information not easily accessible elsewhere.

❖ *Ruth Cooke*

Christopher Whall's Stained Glass Work *is available from Morris and Juliet Venables,*

270 Henbury Rd, Bristol, BS10 7QR, UK.
(telephone 0117 950 7362)
Single copy price, including p&p: UK £36; USA and Canada £39 (air), £38 (surface)
Please send cheque with order.

Other titles listed are also often available through them.

BSMGP REGIONAL EVENTS PROGRAMME 2000

These events are organised by the Society's Events and Education Committee. They are open to members and non-members though members will have priority if an event is oversubscribed. Booking is essential. Numbers for some venues are strictly limited. On the other hand, an event may be cancelled if there are insufficient bookings. The 6 May event at Wrexham shown in the membership card has been cancelled due to unforeseen circumstances. To reduce administrative costs booking forms will not be sent, as previously indicated.

DORSET 15 April

Jon Callan leads a tour of stained glass around Dorchester. He says, "The tour will not be of a particularly academic nature, just for the interest and love of stained glass." See glass by, among others, Whall, Strachan, Evetts, Harry Clark, Mary Lowndes and Isobel Gloag. Total distance about 24 miles. Duration 4 hours approx., with possibility of venue changes on the day. Packed lunch recommended, but tea-rooms etc., are available at the end of the tour. Meet 15 Queens Avenue, Dorchester at 10.30am for briefing and light refreshments. Please bring a pair of wellington boots, as access to one of the churches to be visited can be extremely muddy. Cost: Members £3.50 / non-members £5.50

TRURO 3rd June

Mike Swift leads a tour of some of the cathedral's many Clayton & Bell windows, a set by William Warrington and one by Kempe. Own lunch arrangements - the cathedral has an excellent refectory, otherwise many pubs/bistros/cafes in the town.

After lunch a 15 mile tour with cars to Kenwyn (St. Cuby/St. Keyne) with windows by Gibbs, Saunders and Wailes, Ladock (St. Ladoca) with three major windows by Morris - two early designs by Morris himself and one late Burne Jones - and Penkivel St Michael, with glass by Morris, Willement and Clayton & Bell. There is the possibility of a further visit to Probus, time permitting.

Duration 6 hours approximately. Meet at the West door of the Cathedral at 11.15. Cost Members £5.00/£7 non-members. This includes a donation to the Cathedral and each of the churches visited.
Please book direct with Mike Swift for this event no later than 13 May: cheques, payable to BSMGP, to him at Bodwareen, Chapel Hill, Truro TR1 3BP (01872 242212). SAE for receipt/confirmation.

NEWCASTLE 17th June

Neil Moat leads a tour of stained glass at Wallsend -on -Tyne. St Luke's has a spectacular five light window (1922) by Wilhelmina Geddes. Walk, drive or catch metro to St Peter's, Church Bank, Wallsend (A193) for five windows of An Tur Gloine Studio (Tower of Glass) , Dublin, mainly by Michael Healey, friend and colleague of Wilhelmina Geddes. The vicar will talk about the recent successful project to save the church from demolition. A buffet will be provided. The afternoon concludes with a presentation/slide show on the association between An Tur Gloine studio and Wallsend.

Members may bring slides (particularly of Irish Glass) for discussion afterwards. Map supplied to those booking. Meet at the west door of St Luke's (C of E), in Station Rd, adjacent the Wallsend Metro Station, where car parking is available, at 1pm. Duration 3½-4 hours approximately. Cost £7.00 members/£9.00 non-members, which includes refreshments and donations to both churches.

CARLISLE AND BRAMPTON 22nd July

Arthur Penn leads a tour of Carlisle Cathedral and Brampton St Martin. The east window of the cathedral contains c14 tracery lights of a Doom. Other glass includes much Hardman, Wailes, Clayton and Bell and Powell of Whitefriars. Veronica Whall and Harry Harvey are also represented. Own lunch arrangements - cathedral refectory serves excellent food. Otherwise, many pubs, restaurants and cafes nearby. At Brampton, designed by Philip Webb, all the windows are by Morris & Co., mostly designed by Burne Jones, notably the five light east window. Please indicate on booking if you intend to travel to Carlisle by train as lifts can be arranged for the trip to Brampton. Cost: £4.50 Members/£6.50 non-members

OXFORD Sunday 23rd July

Paul San Casciani leads a tour of stained glass in Oxford College chapels. Meet outside St Mary's the University Church, The High (Street), by the South Porch (barley-sugar columns). Visit to the stained glass of various periods in buildings at the eastern end of The High.

According to availability. Magdalen College School (Lawrence Lee); Magdalen College Chapel (recent major restoration of Greenbury); St Edmund Hall (Early W. Morris); The Queen's College Chapel (Joshua Price restoration of Van Linge) Start 2.15pm PROMPT Cost £8.00 members / £10.00 non-members.

KETTERING 16th September

Paul Sharpling leads a tour of four churches: St Peter & Paul (Kettering Parish Church) with glass by Oliphant, Webb and Nixon, Kempe, Comper, King (Wilkinson) and medieval remnants.

St Mary, with glass by Martin Travers, Percy Bacon, Barton Studios.
St Andrew, with glass by Kempe, Morris & Co (Westminster) and Graham Pentelow
London Road Congregational, with glass by Abbot of Lancaster, A J Davies, Wilkinson and A&C Roberts.
Maps will be supplied to those joining, indicating churches and parking. Meet at the Parish Church behind the Market Place at 1.00pm. (Possibility of venue changes at short notice) Duration 2½ hours approximately. Cost: £5.00 members/£7.00 non-members

LINCOLN 14th October

Tom Küpper, director of Stained Glass Conservation at Lincoln Cathedral, will lead a visit in Cathedral to view and discuss the glass collection. (13c-20c). Makers include Frederick Preedy, Ward and Hughes, Clayton and Bell, Hardman & Co and Henry Stammers. Own lunch arrangements -refreshments available in the Cathedral coffee shop and in nearby old town.

After lunch, a visit to the Cathedral Works Department and the glazing workshop to look at the specific approach of the studio, discussing subjects such as environmental monitoring, indoor pollution, protective glazing and traditional craftsmanship etc., and how the studios functions as a non - commercial, integrated department within the cathedral works. There will be time for questions, discussion and exchange of ideas - this could be of particular interest to practising conservators and restorers. Places for this event are strictly limited to 15.

Duration 5 hours including a break for lunch and perhaps tea. Car parks nearby and free in some streets. £5.50 Members/£7.50 non-members. Additional entry charges to cathedral apply. Meet at 11.00 outside the West front of the Cathedral.

Cheques should be made payable to BSMGP and, except for the Truro event, should be sent to Andrew Taylor, 113 High St, Littleton Pannell, Devizes SN10 4EU (telephone 01380 813878). Please send him a stamped, self addressed envelope if you need confirmation/receipt.

JOURNAL OF STAINED GLASS
From 'A MANUAL OF GLASS PAINTING'

We continue the serialization of A Manual of Glass Painting, which first appeared in the Society's Journal over 40 years ago, and has been chosen by Rodney Bender FMGP as being of potential interest to the present generations of readers and aspiring glass painters.

Tracing in Water

Put as much tracing "colour" as required in the middle of the slab, and moisten it with water. Then add as much gum as will make it adhere to the glass but not so much as will prevent it being easily removed with a quill, or needle. Work this up thoroughly with the palette knife and enough water to form a thick cream. Whilst being used it must be frequently worked up with the palette knife in order to keep it of such a consistency that it will flow easily from the brush when tracing long lines, in order to get them solid and black. When not in use it should be covered with a plant-pot saucer which has been soaked in water for some hours. This prevents the colour drying up overnight on the slab. Whilst tracing, bump the wrist on the handrest from time to time, in order to make the colour flow down the hairs to the tip of the tracer.

The glass having been traced whilst laid on the bench, it is then held in the hand, and the work touched up and strokes of "semi" or half-tint added where necessary to give modelling. It is then allowed to dry thoroughly.

In some cases, as in painting drapery where a hard outline is not required, the tracing is done on the back of the glass as a guide only to the drawing. It is subsequently rubbed off.

Tracing in acid

The advantage of tracing in acetic acid is that it renders the colour waterproof so that it can be worked over with subsequent coats without washing up. It also makes the colour oily so that it flows easily from the brush, and solid black traced lines are more easily obtained. It is made in exactly the same way as gum tracing colour, with the exception that acetic acid is used instead of water. Some glass painters add a few drops of formalin (formaldehyde) to the colour in wintertime, but this is usually unnecessary.

The work should be allowed to dry for at least a day or it will wash up. The scientific explanation of this waterproofing action of acetic acid is that gum, gelatine, white of egg, and similar substances, are nitrogenous compounds which are susceptible of coagulation whereby they are converted into something similar to leather. This process takes some time. In damp weather it may take some hours.

Shading in water

The work now consists of outlines only and if desired can be regarded as finished. Indeed the late James Hogan's last work at Pett's Wood, Kent, is practically executed with outlines only on bare glass. It is all a matter of taste, suitability and distance.

But generally the work has to be shaded with tones ranging from deep to light according to taste. To do this the cut-line drawing is laid out on the bench and the easel glass laid over it. The pieces of glass which have been traced, are then laid out in their correct positions, and melted wax is dropped in places where two or three different pieces meet. The fewer the spots of wax the better consistent with safety. The wax should be very hot or it will not run into the cracks. It is best to heat it until it is just beginning to smoke. When the waxing up is apparently completed, every piece should be tapped with the tips of the fingers, and any which have been accidentally missed will rattle. The easel glass is then placed up against the light for painting.

A "matt" or thin coat of shading colour is then applied. This first coat will eventually serve for the deeper shadows, such as under the eyebrows and chin, or under the turn-over of leaves in ornaments. The shading colour is mixed either with gum and water or with gum, acetic acid and water. In either case a glass-painting executed by this method is commonly referred to as having been carried out " in water".

The addition of acid is by no means essential. The work can be traced in gum, and two, or even three coats of shading colour applied one on the top of another without either traced lines or shading being even slightly blurred. It is all a matter of skill.

But usually it is more convenient to take advantage of the additional security which acid gives in making the traced lines and undercoats waterproof, so that they can be washed over with impunity.

But no matter whether gum only or gum and acetic acid is used, particular care must be taken by repeated trials to get the quantity of gum exactly right. If there is a secret in painting glass it is this. Tests should be made by carefully matting a piece of glass with a coat of colour, graduated from light to dark, and when dry, testing it by gradually removing the matt with a "scrub" of medium stiffness. The colour should gradually come away, and not be totally removed until after about twenty strokes of the brush. If the colour is too hard, much stiffer brushes will be required to remove it, and delicate gradation of tone will be impossible. If it has not enough gum, it will come away leaving patches of bare glass. In that case the best thing to do is to clean it all off and start again.

This first coat for deepest shadows can be applied in two different ways.

(a) It can be applied as a flat even coat over the whole surface of the piece of glass. When it is dry this is all removed with stiff brushes leaving nothing but the deepest shadows.
(b) It can be painted on only where it is actually required, leaving the rest of the glass bare with the exception of the traced lines (Ornament Plate 2).

In either case it must not be applied too dark, because it will have two more coats of paint applied on top of it which would make the shadows too heavy.

In the first case (a) the matt is applied of such a depth as to allow for the two subsequent coats. It is generally mixed about half acetic acid and half water. Too much acid is liable to dissolve and wash up the outlines. It is applied in a flat even tint. Out of this lights are taken out with large brushes removing *all but the deepest shadows.* A second matt mixed with weaker acid is then given, and lights are removed *leaving only the middle tones.* Finally a thin coat of colour mixed with gum only is given. Out of this the highest lights only are taken (Plate 1).

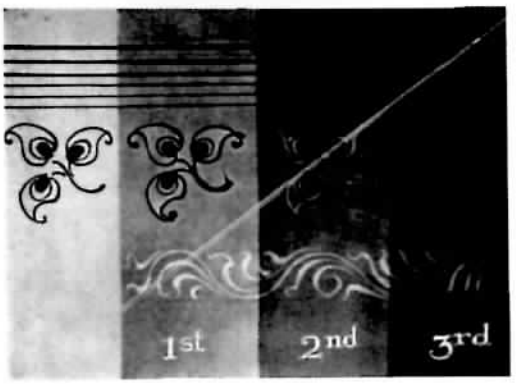
The above system of painting with outline and three successive coats of matt, was the one adopted in Swiss work, and is applicable where delicate gradation of tint is required as in the case of a head. But in ordinary work one, or at most, two coats is sufficient.

In the second case (b) which is chiefly employed in larger work such as drapery, ornament etc., the deepest shadows are washed in with acid colour as before, not over the whole surface but only in parts where they are wanted such as under the turnover of ornament (Plate 2, a) or the deepest recesses in drapery (Plate 4). The part is first damped (not wetted) with a large mop and clear water and the paint is then applied with a smaller mop. It is then brushed and pushed in a forceful manner up into the deepest and darkest recesses of the ornament, but gripping the badger-hair softener in the whole fist half-way down the hairs so as to give control and direction. In smaller work a round badger-hair softener such as those used in china painting can be used. The deep shadows are then cleaned up where they have overstepped the boundaries of the outlines, a matt of gum-colour is then given over all and lights taken out with scrubs and quills as usual (Plates 2 and 4).

British Society of Glass Painters' Journal Vol XII No. 2 1956–7 pp. 120 –122.

PLATE 1.

USE OF ALSO GREEN.



Showing how the aid is obtained in deepest shadows by means of three coats of paint

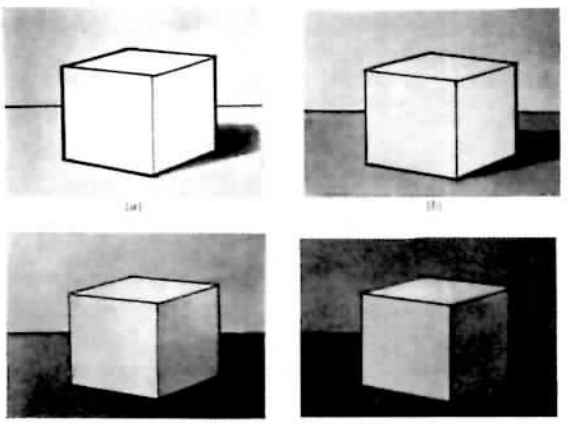


PLATE 2.

PAINTING ORNAMENT IN OIL

Design traced and shadows worked up by means of cross-hatched lines. High lights removed with scrubs and quill

PLATE 3.

PAINTING ORNAMENT IN WATER

Glass traced in and coloured. Stamped over with a lion sight. Shadows painted in and brushed into coloured parts. High lights removed with scrubs and quill

PLATE 4.

PAINTING DRAPERY

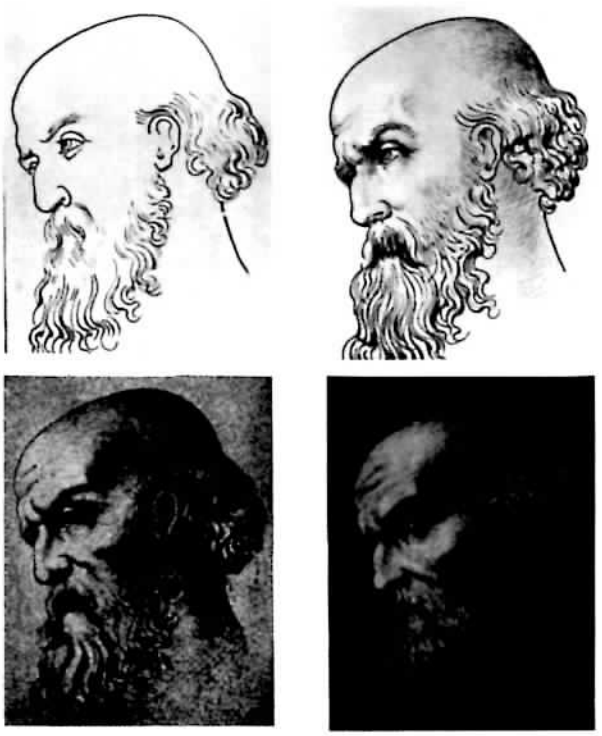
Glass damped (not wetted) shadows painted on and brushed up into darker parts of folds. Stippled over, finger tips passed lightly over the work to loosen the colour and lights removed with soft scrubs

(Note. The depth of the stipple has been exaggerated so as to bring out the technique more clearly.)

PLATE 5.

PAINTING A HEAD.

(First Method.)



Head traced and shadows worked up by means of cross-hatched lines, stippled over and high lights removed with scrubs and quill

From 'A MANUAL OF GLASS PAINTING'

The serialization of A Manual of Glass Painting, taken from Volume XII of the Society's Journal continues here from Issue 10, May 2000

OIL TECHNIQUE

Heads and drapery can be painted "entirely" in oil. But that expression among glass painters does not imply that no watercolour whatsoever has been used. The tracing may be done in water, and a thin matt or stipple of watercolour has almost invariably to be applied to form a ground to work upon, for oil colour cannot generally be manipulated on bare glass, as the surface is too slippery.

As a rule, painting in oil is used as an auxiliary to watercolour rather than a distinct process, as it provides a means of obtaining additional depth of tone in the shadows, after the work has been carried as far as possible in water.

MATERIALS REQUIRED

Tracing Brown, Shading Brown etc. (as above) *see page 4, of issue 9
Spirits of Turpentine (Genuine American) "Turps Substitute" should on no account be used as it turns the other ingredients curdy. Spirits of Turpentine is used as a thinner, and cannot be used alone as it evaporates too quickly. A sticky medium has to be added to made the colour unctious and greasy. For this purpose fat oil of turps - generally referred to as "fat oil" - Venice Turpentine, fat oil of tar, or balsam of copaiba are all used.

Fat Oil of Turps. This is made either by evaporating spirits of turps in a saucer until a sticky resinous residue is left, or by dissolving powdered resin in turpentine in a wide-mouthed glass jar until it is as thick as treacle. This is known as Venice turpentine. Fat turps acts as a "binder" whereas spirits of turps is a "thinner". It makes the colour sticky and workable so that it flows from the brush.

Oil of Lavender, also called oil of spike was much used years ago for tracing as it is more unctious than turpentine and does not immediately evaporate, but it is rarely employed at the present time on account of expense, and the fact that tracing in oil has been largely replaced by water (i.e. gum) and acid. The "copper-plate" tracing seen in early nineteenth century work was all done in oil of spike.

Balsam of Copaiba. This is a very sticky resinous liquid which is used as a "binder" in the same way as fat oil. It can be purchased at a chemist's as it is employed in medicine. It should be kept in a small wide-mouthed bottle into which the palette knife can be introduced.

Brown Spirits of Tar. This is much used, and as there are various samples and varieties it pays to take the trouble to get the right kind, which is supplied by artists' colourmen for painting on china. It should be a clear yellow or brown, not too fatty nor, on the other hand, too spirituous; but should evaporate in about twenty four hours. It can be used in three ways:

(a) as a thinner or medium for mixing with shading colour or oil stain.

(b) as a thin coat applied over a stipple or matt in water into which shading colour in oil can be worked where greater depth is required in the shadows. For this purpose it is generally mixed with spirits of turps to facilitate drying.

(c) fat spirits of tar, made by evaporating the ordinary spirit in a saucer until it is a thick sticky liquid, is used as a binder and for giving the sticky gummy consistency to shading colour or oil stain which has been mixed with turps. Fat tar, fat oil (of turps) and balsam of copaiba, are therefore all employed for the same purpose. It is purely a matter of preference.

Oil of Cloves is occasionally used with the addition of a small quantity of balsam of copaiba for "oiling in" on the top of a matt of watercolour, when it is desired to work for some considerable time, as e.g. in the case of painting a head in coloured enamels. The sticky balsam holds up the paint, and the oil of cloves keeps it open and retards drying.

Paraffin with the addition of a small quantity of balsam of copaiba is used in the same way in large work.

TRACING OR SHADING COLOUR IN OIL

These are both mixed in the same way. Put as much colour as required in the middle of the slab and moisten it with turpentine. Then add about as much fat oil, or balsam as will stand on the end of a palette knife and mix all well together. If too little fat oil or balsam is added, the colour will not flow from the brush, and it will dry off too quickly. If too much is added the colour will dry with a glossy surface, and the traced lines, wkere it has been applied thickly, are liable to "fry" during firing in the kiln, caused by the resin boiling up and bubbling.

Colour mixed in oil never works well until it has matured for some hours on the slab, and until then solid black traced lines are difficult to obtain. It is always best to work with old colour rather than with that which has been freshly mixed, and to keep adding to it as it gets used up. It should be kept covered with a tin lid in order to keep out dust.

PAINTING IN OIL

The work having been traced in acid and allowed to dry thoroughly, it is then given a flat even matt all over half acid and half water and not too dark. Out of this the masses of light are removed in a broad manner so as to leave the middle tones only. No fine detail should be attempted at this stage, the most delicate gradations should be reserved for the last coat, which, as before consists of a matt or stipple of gum colour applied thinly. The highlights on the nose, hair, etc., are then removed with brushes, quills and needles and the work is finished, with the exception that the deepest shadows under eyes, nose, chin, etc., are missing. These are now added in oil, the process being similar to what is termed "oiling in" in oil painting where the canvas is given a thin coat of poppy oil or similar medium and the glazings worked into it.

The work is first dusted with a very soft camel-hair brush to remove any loose pigment which would mix with the oil coating and dull the high-lights and bare glass.

It is then given a very thin coat all over of whatever medium is preferred, either oil of tar only, half tar and half turpentine (genuine American only) or oil of cloves and balsam of copaiba. The proportions (usually half tar and half turps) depend upon the dryness of the air, the length of time it will be necessary to work, the speed at which the tar or turps evaporates or in other words the volatile or gummy condition of the media employed. This process is called "oiling in". In the case of a head this coat is best applied to the glass when it is laid down flat on the bench and not up against the light, as unevenness and streaks can be more easily seen. A soft camel-hair mop is used and the coat must be applied thinly or the oil colour will run and not stay put. If by accident it has been applied too thickly, it can be carefully blotted off with tissue paper and the head re-oiled with the mop previously used, but out of which the excess of medium has been squeezed with the fingers. Another way is to spray the medium on with a vaporiser such as is used for fixing drawings or spraying perfumes, etc. In this way an even and very thin coating can be obtained. Less delicate work can be "oiled in" whilst the glass is waxed up on the easel.

The shadows are then painted in with the shading colour in oil. If necessary this can be thinned with the medium used for oiling in. It is better to apply the paint in cross-hatched lines similar to a steel engraving, rather than lay it on in flat patches. It is then stippled or blended according to taste. In about twenty four hours the medium should have evaporated sufficiently for stick or needle lights to be taken out where necessary.

Another way of giving additional depth to a glass painting without firing and re-painting, is to mix up some "colour" with turpentine and only a very small quantity of Venice turpentine, just enough to hold it on but not so as to make it fatty. The work is given a stipple all over with this, in the same way as if it were watercolour. In half an hour the turpentine will have evaporated and lights can be taken out with scrubs in the usual way.

MATTING

Brushes

A 2 in. flat camel-hair brush, or better still a 2in. flat ox-hair brush, such as is sold by oil and colour merchants and is used for graining. The hair in these is longer and has more spring. One or two flat camel-hair or Siberian hair, wash brushes or mops about 1 in., and one or two smaller and round.

A 2 1/2 in. or 3 in. softener. These are made in both badger hair and hog hair. The former are expensive, costing about £2 each, but both kinds are commonly referred to as "a badger".

A matt is usually a smooth coat of "colour" without any grain which can either be of a flat even tint or graduated from light to dark. The "colour" is first worked up on the slab with the palette knife to the consistency of thick cream. The mop to be used is then worked into this until it is loaded with "colour" and then tried on the bare glass at the side of the easel to judge the depth. It is then applied to the glass

in flat strokes crosswise and then in the opposite direction. The badger is then applied to spread the coat evenly and to eliminate brush marks. It is finished off with one or two lights strokes more or less in the air. The badger should be perfectly clean with no dried "colour" on the tips of the hair or scratches will be formed.

A matt can be graduated from light to dark by manipulating the paint as it is applied to the glass and afterwards brushing it in the required direction so as to make it pile up more thickly where greater depth is required (Plate2 a)

It can also be used to produce a canvas-textured effect (Plate 2c). To do this, apply the colour and badger it smooth, then holding the softener nearly upright, lay the side of the hair (not the tips) on the glass and draw it down from top to bottom leaving the matt in lines. When this is dry the tips of the fingers are passed lightly over the surface of the glass so as to *loosen* but not remove the colour. When this has been done there should be no visible change in the appearance of the matt, but on gentle strokes being applied with a soft scrub, the colour will come away in fine lines similar the ribs on canvas.

STIPPLING

A stipple is used to eliminate brush marks and at the same time to give a texture or grain of light and dark dots to a flat or graduated coat of "colour". It is generally easier to obtain delicate gradation by taking lights out of a stipple than out of a matt.

Brushes

One Hamilton's glass painter's stippler in quill size 4 and one size 1. The "colour" should be worked up into a cream as before and tested for depth of tint. It is then applied to the glass either flat or graduated as required, but slightly darker than for a matt as the stippler removes a certain amount of colour. A wet chamois leather is kept in the left hand to clean the tip of the hairs of the stippler as they become clogged. The stippler is first dipped for one minute in water and then dried on the leather so that it is only moist. A patch of colour is then applied to the easel glass at the side of the work and the stippler is then worked into this both to pick up the colour on the end of the hairs of the brush and to test the fineness or coarseness of the grain. If too fine the colour has been applied too dry and it must be thinned until the hairs begin to stick together in little tufts so as to produce larger dots. When the desired grain or texture has been achieved, the actual work can then be proceeded with. After a time, the stipple will tend to get coarser, due to the brush picking up more and more colour. It should then be cleaned by rubbing the tips of the hair on the leather. Some German glass painters do not apply the colour with a mop and then stipple it, but dab the end of the stippler into the colour on the slab and then apply it direct to the glass, exactly as in stencilling. But this produces very coarse work. A stipple is sometimes done by using the badger hair softener instead of the stippler, but this does not produce such a clearly defined grain.

British Society of Glass Painters' Journal Vol XII No. 2 1956-7 pp. 122-126

From A MANUAL OF GLASS PAINTING

We continue the serialization of A Manual of Glass Painting, *taken from Volume XII of the Society's Journal. Perhaps this particular selection requires several health warnings!*

Removing Lights out of the Stipple or Matt

Lights are removed from a stipple or matt by means of brushes, quills, and pointed sticks or needles. The brushes are known as 'scrubs'. They are made from old oil-painting brushes which have got worn down, of various shapes and sizes. When required stiffer, they are held in the flame of a candle or held against the side of a red hot stove till the hair is the right length. They are then rubbed on fine sandpaper. Quills are ordinary quill pens with the split part cut away and shaped to a point like a pen but not split down the middle. A long fine point enables great variety in the width of the line to be obtained.

Pointed sticks are generally wood skewers, but any moderately hard wood will do. Needles are mounted by driving them into the end of the handle of an old oil painting brush.

There are several different ways of removing the lights:-

(a) by punching out by dome shaped brushes, the action being similar to stencilling with oil paint.
(b) by gradual strokes of soft hog hair brushes
(c) by circular strokes crossing one another made with the needle or quill, similar to the lines in a steel engraving. This requires considerable practice and skill.
(d) by stabbing out dots with the point of the stick. This was the method used for removing lights on drapery and flesh in minute Swiss glass paintings.
(e) by the use of barrel marking brushes made by Hamilton and Co. These have flat wood handles bound with string and short black and very stiff bristles like fine wires. The smallest No.l is 3/8" wide and No. 3 is 3/4". They remove sharp and distinct clear lines close together similar to the lines obtained by mounting a dozen fine needles side by side in a split wooden handle, which some glass painters make for themselves. These brushes are not suitable for curved strokes, but are used to obtain short straight strokes, crossing each other in all directions.
(f) by rubbing the surface - usually of a stipple - with the tips of the fingers until small holes just begin to appear. The loosened pigment is then dusted off with a soft brush.
(g) by gauges. These are strips of wood about 3/4" wide and four or five inches long, cut from the thin wood used for backing pictures. Plywood is not so convenient as it cannot be split. A portion or small step is cut out of one of the sides at the end of the strip, say 1/8" deep and 3/8" wide. When this is hooked over the edge of the glass and run down it, it removes a border of clear glass 3/8" wide. This is very useful when a large number of strips of glass in borders have to be dealt with.
(h) stencils. These are hardly ever used nowadays but diaper patterns on backgrounds were frequently stencilled in Swiss glass. The stencil is cut out of stiff paper or tin foil. They can also be obtained from professional stencil cutters who make them out of thin brass. The glass, after being matted over, is placed under the stencil and the pattern brushed out with a brush similar to a toothbrush. A typewriter brush does very well.

Borders

Borders measuring 1 1/2" or thereabouts for which carefully designed patterns of foliage or ornament have been drawn are traced and painted by any of the foregoing methods in the ordinary way.

But narrower borders, which would be more correctly described as fillets, frequently coloured, are produced by semi-mechanical means, without which the hundreds of yards of these patterns to be seen in the windows of Chartres, Bourges, etc., could not have been produced.

Fillets with a clear glass border on each side and a broad black band down the middle out of which a wavy line or similar running border has been scratched out, are done by coating the borders with old colour out of the smudge jar (after it has been tested for the amount of gum it contains) and scraping off the clear border down each side by means of a gauge. To get the width of the clear border right, a trial should be made and a short length of the lead intended to be used in glazing fitted on each side, in order to get the width of the border exactly right. In most cases it will be found that the lead covers more of the glass than was expected and the width of the clear edges is too narrow. The pattern is then scratched out by hand.

Pearl borders or fillets which show a succession of round dots of 3/8" or thereabouts close together on a black ground are produced in the following way. Some ordinary whiting is mixed on a slab with water and enough gum to fix it, until it is the consistency of thick cream. An old oil-painting brush with a a tapered handle of suitable size is then taken and cut off square to form a short stick, the flat end of which forms a circle just a little smaller than the required pearl. This is dipped into the whiting and the blob it collects is transferred to the glass. If the blob does not flow to the edges of the circle but appears semi-transparent-, with a thicker coat in the middle, the whiting is too stiff and must be thinned. When a strip of border has been done, it is given a slight shake to make the whiting flow to the edges and give an evenly-coated dot. When the borders are dry, some old oil colour is mixed up and each strip is given a thick coat all over, dots and all. Old water colour out of the smudge pot does equally well if the dots have been gummed sufficiently in order to prevent them washing up, or if acetic acid has been used instead of water. The borders are then fired in the kiln, after which they are scraped with a glazing knife, when the dots will shell off leaving a clear circle on a black ground. If a highlight is required in the centre of each pearl, the borders are given thin matt on the back of each strip before they are fired and the dot removed with a stick.

If the pattern is an elaborate one, and some guide to the main outlines is required so as to get all the borders alike, this is done by means of a *pounce*. The ornament is drawn on cartridge paper, which is then laid on a couple of thicknesses of felt or similar material, and the lines are pricked along with a needle to which a little round head of sealing wax has been added. The holes should be close together like the perforations between postage stamps. The paper is then turned over, laid on a piece of glass, and the burrs on the holes lightly removed with fine sandpaper. A strip of wood about the length and thickness of a school rule is tacked on a piece of board and the pounce carefully adjusted and fixed with drawing pins, so that when the border is pushed under it and against the lath it will be in its correct position. The pattern is then obtained on the matted strips by dusting talcum powder, flux, or similar white powder over the pounce with a tuft of cotton wool. Whitening is unsuitable for this purpose as it clogs the holes. The pattern is then scratched out with a stick.

Fluxing on Jewels

Occasionally on fifteenth century work where expense was no object are to be seen on the borders of curtains, robes, nimbi, etc., coloured jewels which have been attached to the surface of the white glass without being leaded-in. Some have shelled off leaving white glass. This is due either to faulty workmanship, or to the co-efficiency of expansion of the two glasses not being the same. This process is called 'fluxing on'. The jewel, round, oval or square, etc., is carefully cut to the required size and shape. A lead glass is best for this as it melts at a lower heat than the ordinary soda-lime glass. The glasses known as "Art Streakies" are generally lead glasses. A small quantity of glass painter's flux is then ground up on a clean slab, some gum added and the jewels are stuck on in their correct position with this. When this is dry, some tracing colour is painted round the top edges of the jewel to tidy up the shape, continued down the vertical edges of the jewel, and then for and eighth of an inch around the jewel on the base glass on which it rests. These three, top, sides and around the base must be all done at the same time, and the paint applied thickly into the corner where the sides of the jewel and the base glass meet. It is then given a good fire and afterwards painted up as required.

Failures and Remedies

Acid colour turning Curdy on the Slab: add a very small quantity more of acid. The colour will immediately turn liquid and flow.

Shadows turn Grey instead of Dense after Firing: this is caused by minute holes due to "frying". Rub in dry powder colour and refire.

Outlines "Frying" in the Kiln: this is caused by too much fat oil or treacle being added to the colour which causes it to boil up. It is also caused by stale colour. Scrape off with palette knife and touch up with water colour after first damping the glass.

Tracing Colour "Fretting" this means refusing to stick to the glass, due to the surface being slightly greasy in places. Breathe on the glass.

Helpful Hints

Keep a smudge pot, ie a glass jar into which all scrapings of slabs, the sediment at the bottom of the water pot of any kind or tint, and either acid or gum are dropped and kept covered with water. It is all good stuff and does very well for scratched-out borders etc. The scrapings of oil colour slabs of oil and water stain must be thrown away.

Glass which has been painted in water and has to be sent by post to fire should be laid on a newspaper and sprayed with fixatif used for fixing drawings. Fixatif is made by dissolving powdered resin in methylated spirit until it is a pale yellow. Spirit varnish thinned with methylated spirit is the same thing.

Care of Brushes: wash all water colour mops and wash brushes thoroughly by shaking in water. If allowed to dry full of colour, the colour dries at the base of the hair and can never be got out. This causes the hairs at the base, near the tin ferrule, to swell and ruins the tip or point.

Oil brushes should be shaken in turpentine substitute, and dipped in a non-drying oil such as sweet oil, oleic acid (tallow oil), bicycle oil or similar.

Always dip Badger-Hair softener in water and clean tip on wet wash leather before putting it away. Acid colour hardened on the tips of the hairs causes scratches. The tips of the hairs are tapered naturally and should be taken great care of.

If put away for any length of time brushes should be kept in tin boxes and dusted with D.D.T. The grubs of the moths eat the tips only and so ruin the brush.

BSMGP Journal Vol XII No. 3 1957-8 pp. 198-201

JOURNAL OF STAINED GLASS - From 'A MANUAL OF GLASS PAINTING'

As space has permitted from time to time, this article has been reprinted in instalments in the newsletter at the suggestion of Rodney Bender. This selection concludes the article, which originally appeared in Volume XII, nos. 2 (1956-57) and 3 (1957-8)

Special Methods and Techniques

The previous description gives a general outline of the processes usually employed in glass painting. It will now be convenient to describe various techniques which have been adopted by different artists in order to bring out some special characteristic of treatment of glass at which they were aiming.

The first is the technique adopted by the late C E Kempe for which I am indebted to Mr John Winbolt of Reading who worked in that system for many years.

The easel glass was laid flat on the cartoon and the main features and indications of the hair were lightly traced on it with India ink. The piece of glass for the head was then stuck over this with wax. It was then placed upon the easel and a very thin matt of water colour (made hard with extra gum) applied all over. The lights were then brushed out to give the modelling and the features, and the lines of the eyes, nose, mouth, hair, etc. were traced very delicately. The head was then oiled all over with spirits of tar and the shadows painted into this with colour ground in the same medium. When the required depth of modelling had been attained, the whole was stippled over with a hog-hair stippler so as to obtain a fine stipple. The aim is to leave a very light tone of pigment over the lightest parts out of which, when dry, the highest lights are removed with needles and quills. If the work was too light after firing it was stuck up again and the traced lines and shadows strengthened as required. It was then stained and refired. The white draperies were painted in the same way, but the coloured draperies were stuck up, the shadows washed in and stippled over in water and lights taken out, after which the shadows were strengthened in water, as described above in "General Instructions".

Second method

The head was carefully traced "semi" or half tint (not black) and the outline fired down bright. The object of this was to enable the traced lines to be worked over in the same way as the bare glass as the matting colour tends to collect up against the edges of a traced line which is not fired down and so form ridges. It was then stuck up on the easel glass and surrounded with brown paper so as to block out as much light as possible. It was then given a very dark coat of matting colour, through which the outlines could only dimly be seen. The tips of the fingers were then lightly passed over the parts where the lights were to be removed so as to loosen but not remove the colour. The various shades and tones were then slowly and gradually worked out of this with soft brushes. A smooth treatment was not aimed at, rather the effect of the lines of the chisel in a woodcarving of a head in oak.

The drawbacks to this method are that it is extremely slow, any mistakes can hardly be rectified, and the finished work is inclined to have a somewhat papery effect.

Staining

The yellow stain is the only colour which the glass-painter can produce himself and which actually stains and penetrates the substance of the glass.

All other colours are obtained either by means of glass already coloured in the manufacture, or by the application of coloured enamels painted on the surface which do not penetrate.

Stain is produced by a preparation of silver painted on the back of the glass. As the amount of silver required is very small, it could not be applied alone, but has to be mixed with some material to make it workable and increase its bulk, in the same way as the minute quantity of mercury required in a liver pill is made into sufficient bulk of convenient size and shape to form a pill by means of castile soap. On the glass being heated to a dull red heat the silver drops down and penetrates the glass staining it yellow, and the material with which it has been mixed is afterwards rubbed off.

Stain is generally supplied in three strengths, pale, medium, and deep. The shades or depths of tint which can be obtained range from pale primrose yellow to deep orange.

The shade of tint depends upon two things:-

(a) The strength of the stain, i.e. the amount of silver it contains.

(b) The chemical composition of the glass to which it is applied.

No amount of experience can enable a glass-painter to tell offhand how a particular glass will take the stain. This can only be determined with certainty by actual preliminary trial. This can be done in a rough and ready way by firing a strip in a square shaped cocoa tin laid on its side with some whitening on the bottom on the top of a bright fire. As a rule greenish - tinted glass stains more readily than yellowish. Some glasses will not take a stain at all, and modern sheet-window glass is not easily stained. On the other hand, a sheet glass known as kelp, so called from having formerly been made from soda derived from plants which grew near the sea shore, can be stained so as to produce first a yellow, next an orange, and finally a red. This was used in the eighteenth century as a substitute for ruby, the secret of making which was at that time lost. Before the war it was possible to obtain "staining sheet", which was sheet glass flashed with kelp. This could be stained easily on one side, but not on the other.

Stain can be applied to coloured glasses as well as white and tints. Some blues take a good stain to form green, light rubies can be stained to give scarlet, and purples to give maroon and salmon tint.

Practical instructions

Materials required

One or two ounces each of pale, medium and deep stain. In appearance these three can be either all yellow, or the first two a rich brown and the third a dark grey. It makes no difference which is preferred. They are all of the same chemical composition. The dark grey colour of the deep stain is due to the fact that it is, unlike the others, made with black antimony, so that it is frequently referred to as "antimony stain".

Water and gum.

Spirits of turpentine (not turpentine substitute) and fat oil of turps, fat tar, or balsam of copaiba.

Mops, long haired camel hair wash brushes

Badger hair or hog hair softeners.

Slabs, and a small glass muller.

All slabs and brushes used for stain must be kept for stain only and not used for anything else.

Stain can be applied either in water (i.e. with gum to fix it) or in oil (i.e. mixed with turps and a binder such as fat oil, etc., to fix it and make it flow). Generally water is used for large surfaces, and oil for small spots.

It is always applied to the back of the glass and to bare glass only. It cannot be painted over shading or outline colour. Stain is rarely required in a flat even tint. It is generally shaded from deep to light. This can be done in water by first damping the glass, and after applying the stain, using the badger to make it pile up thickly where wanted. Or it can be "floated" on. The glass is first damped and the stain applied thickly where wanted and then by jogging the brush from side to side and drawing it towards you, the coat gets thinner and thinner till there is no stain left in the brush. In shading with oil stain, the glass must first be given a thin coat of oil or tar.

Although to save trouble and extra firings, stain is generally fired on at the same time and therefore at the same heat as the shading colour, this is a great mistake. Stain requires only a very low heat, in fact the kiln should be heated to no more than a dull red. Too much heat takes away the transparency and gives an opaque yellow effect on the back of the window to the parts where the stain has been applied which has a most objectionable effect when seen on the outside of a window. This is called " metalling".

In order to obtain the effect of yellow stain on glasses which cannot be stained with silver, there is a transparent lemon yellow manufactured for the purpose.

Recipes for silver stain

Stain is better bought ready prepared. But for those who like to make their own the following recipes are given:-

No.I

Chloride of silver ..... I part
Yellow lake ..... 4, 8, or I2 parts

according to whether the stain is to be deep, medium, or pale. Yellow lake is generally used because, being a transparent yellow, it resembles the stain as it will appear when fired. It also rubs easily off the glass when it has come out of the kiln, but burnt ochre, rouge (i.e. red oxide of iron used for polishing lenses, jewellery etc.), venetian red, pipe clay, and many other substances all answer the same purpose.

Antimony stain

Stain made with sulphuret of silver is thought by some to give a deeper yellow than chloride. To make it, cut up a thin piece of pure silver into small pieces and mix it with one part of crude antimony and one part of lump sulphur in a crucible: and heat them in a charcoal or a gas furnace. When the sulphur begins to burn, the mass is in fusion and it is then poured into water to break it up, and afterwards ground fine with water. For this a slab not less than I5 in. square and a glass muller weighing about 3lb will be required. It should be ground until no grittiness can be detected when a small portion is rubbed between the nails of the two thumbs. It is then dried and mixed with about three or four parts of rouge or venetian red.

Pyragyrite

This is a grey porous mineral, which looks very similar to a lump of gas coke. Chemically it is a natural sulphide of silver and antimony. It needs no preparation or addition of any kind, except grinding with water and a little gum. It gives a stain ranging from pale primrose to medium yellow.

PLATE 6
PAINTING A HEAD
(Second Method)
This method is precisely the same as that previously described for painting a die with outline and three coats of paint. (Plate 1, facing p.118 ante.)

PLATE 7
PAINTING A HEAD
(Third Method)
In water and oil

Trace the outlines in acid or gum (a). Give a flat even stipple of fine grain all over.

Gently pass the finger-tips over parts where lights are to be removed, and gradually remove the colour by stroking with soft scrubs or by punching with the tip of the brush.

Dust the work with a soft camel-hair mop so as to remove any loose pigment.

Carefully correct any holes, spots, etc. with the tip of the tracer or a fine water-colour brush, and remove black spots with the point of the needle.

Oil the work thinly all over with medium (oil of tar and turps., or whatever is preferred), and paint in shadows and stipple. Allow to dry and remove high lights on drapery with needle or quill.

PLATE 8
PAINTING A HEAD
(Fourth Method)

This is a combination of methods two and three.

Trace Head. Give coat of acid colour all over for middle tones, and clear away the broad high lights. Give a thin coat of gum colour and gradually work out the lightest tones with scrubs.

Take out the highest lights with needles and quills. The painting is then almost completed with the exception of the deepest shadows. Dust the work with a soft camel-hair mop, oil all over with medium (oil of tar and turps. etc.), paint in deepest shadows and stipple.