HOW TO PAINT ON GLASS.



T. JEROME and Gregory of Tours, who lived during the fourth century, are, we are told, the first writers who make mention of glass windows. Cathedrals and abbeys were enriched with coloured glass long before windows became general in houses. As early as 669 the Archbishop of York improved the cathedral by the introduction of windows; still

they were not generally adopted, even in churches, until the twelfth century. The palaces sacred to royalty were the next to enjoy the luxury of glazed windows, then the nobility followed, while the commoners had to wait until the sixteenth century before

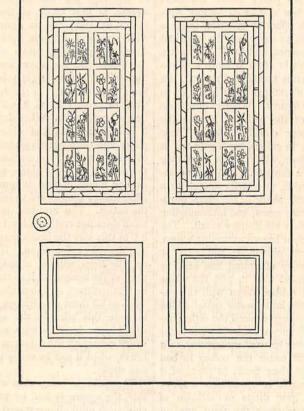
glass was made in sufficient quantities for them to fill their casements with it. The general supposition is that the earliest windows were arrangements of coloured glass in mosaic patterns; the ease with which small pieces of glass could be fused, in comparison with larger sheets, probably accounted for the employment of the mosaic style. Later on figures were inserted, being outlined and shaded with black, and afterwards fired. Next came painting on glass with colours mixed with oil and varnish, or with white of egg; but this method, proving to be liable to be damaged by exposure to the weather, was again supplanted by a new and better plan -namely, that of using vitrified colours, which are believed to

have been invented by the Flemings or Germans. By availing himself of these means, the artist was placed in a position to introduce without difficulty intermediate tints, and varieties of effect, such as could not be accomplished under the old system; this natu-

rally led to a general employment of them, until, as we read, in France the mosaic style was abandoned in favour of the colouring of glass by the enamel process.

In painted glass, properly so styled, there is inevitably present the sense of heaviness and obscurity. By covering glass with pigments the light is necessarily lessened, the surface being rendered in some degree opaque; then, too, the treatment of a window as a picture is obviously against the canons of good taste—the figures highly relieved from the background become obtrusive, and the sensation of space is lost. But when art revived the old style was again adopted. As the great masterpieces in oil cannot be surpassed by modern work, though centuries of learning have rolled by since first they were executed, so with coloured glass windows, no art, no science, can

improve on the richness and brilliance of the glass manufactured during the best period of the art. Modern workers must, if they would succeed, follow the early glass-painters. as students learn from copying the works of the old masters. Of glass there are several sorts; the ordinary window - panes are termed "sheet "Rolled glass." glass," to which preference is given, the former being seldom used, is thick and semi-transparent. White, green, yellow, grey, buffs, and strawcolours can all be obtained in this kind. which is also known as "cathedral glass." " Pot - metal glass " is coloured during manufacture: the colours being incorporated with the other ingredients in the pot causes the entire body



to partake of the given hue. Oxides of iron, lead, copper, cobalt, and silver are employed to impart the various tones. "Antique glass" is another name for the same. "Flashed glass," on the contrary, is coloured on one side only; the body of the glass is

white, and it is coated while hot with a thin layer of coloured glass. "Flashed opal" is, as its name implies, opaque. "Bubble glass" is another kind of potmetal glass. The requisite tools for the decoration of



the above are few, while the choice of colours also is necessarily limited. Some brushes of sable and camel-hair, two badgers, a few scrubs made from hog's-hair brushes, an easel or frame, an arm-rest, a glass muller and slab, a palette knife, the colours, and some yellow stain, a bottle of fat oil

of turpentine, some ordinary turpentine, and a pot of ox-gall will complete the list. The colours are made from oxides of metals, with the addition of flux of borax, so that when laid on the glass and exposed to heat they fuse, and adhere to the surface; the borax in melting encloses, as it were, the colours between two layers of glass.

The amateur will find it the easiest plan to commence on squares or quarries of rolled glass, either white or slightly tinted. A fanlight, a windowblind, or the small square panes above casement windows, all look well when decorated simply with quarries, although the rich effect of coloured glass is wanting. Another plan is to carry out the principal portion of the space in quarries, and to fill in a centre of a coloured design. This is often done in windowblinds; the sides are squares traced and stained, the centre being composed of antique glass arranged to represent fruit, flowers, or figures. We give directions first for the decoration of the quarries, leaving the coloured designs for later consideration. quarries vary in size and in colour, but a pale tint is perhaps preferable for blinds, while deeper hues may consistently be placed in a fanlight. It is not necessary, and not always desirable, to restrict oneself to a single tint. Artists vary the shade of the glass, introducing two shades of delicate green, and intermingling with them yellow tints, with a satisfactory result. The squares are traced with colour known as tracing brown. Some colour in powder is placed on the slab, or palette, a very small quantity of grated loaf-sugar is



mixed with it, and the whole is rubbed down with the palette knife, water being added by degrees until the right consistency is secured. The sugar must be used moderately, or it will cause the colour to boil up when fired; in place of it treacle is sometimes used, or a few drops of solution of

gum arabic. As a test whether the right amount has been amalgamated with the tracing brown, allow it to dry on the slab; if it takes a long time to do so, and remains shiny, more powder must be added, otherwise there will be the danger of its "bubbling" in the kiln. If the palette knife does not grind the colour down sufficiently smooth, the muller

must be brought into requisition, but for rubbing down small quantities it is not always employed. It is an important point that no particle of powder should remain unground, it must be rubbed until all grittiness has disappeared; the small lumps, if allowed to remain, will appear darker after the painting has passed through the furnace than the rest of the tint, and the effect will be anything but good. To use the muller, first mix the colour, a little water, and sugar together with the palette knife until soft, add more water, then rub round and round with the glass muller, collecting the colour up again with the knife when it has spread too far on the slab.

Colour that has been mixed for some time before being used is far pleasanter to work with than any that is mixed at the time of painting; it floats better, and adheres more readily to the glass. The artist will also find that exposure to the air brings turpentine into a good working state. It is in these triffing matters that the amateur is often at fault; slight technical hindrances, that are quickly overcome when once we understand their nature, often rise into mountains of difficulty through want of a word of advice rather

than through want of skill. A drawing, the size of the square, is first made of the flower or leaf; this is done with pen and ink on thick drawing-paper; the petals of the flower and the leaves are then filled in with bright vellow; the drawing is lastly sized to protect it, as it will be used repeatedly. When dry it is laid on a sheet of white paper, and the quarry is placed



over it, so that all the worker has to do is to trace off the pattern on to the glass-not quite so easy a matter as one might at first suppose; the thickness of the glass makes it awkward to follow the lines correctly at the outset. The arm-rest must be used so that the hand does not rest on a level with the glass, but above it; in this way the brush may be held perpendicularly, and the colour floated on. If it is painted or dragged on, the lines will be streaky when dry. All thick parts of the design, such as the stamens, or stalks, must be first outlined, and then the colour is to be floated in so as to fill them up with one stroke of the brush. To manage this adroitly the brush is filled and held upright, the hand is then struck gently on the table, which causes all the colour to flow to the point of the brush, when it can be easily transferred to the glass at one stroke.

The outlines being thus all drawn on the smooth side, the square is laid by to dry, and the process is continued until all are traced. When these are quite dry staining is commenced. The petals of the flowers, and also the fibre of the leaves, are filled in with yellow stain on the reverse side to that on which the tracing is done, namely, on the rough side. The stain, which is composed of chloride of silver, is mixed with oil and turpentine in the following manner: - Some powder is put on the slab, and the point of the palette knife is dipped into the oil of turpentine, which is rubbed thoroughly into the colour; it is then gradually diluted with turpentine until of the right strength.

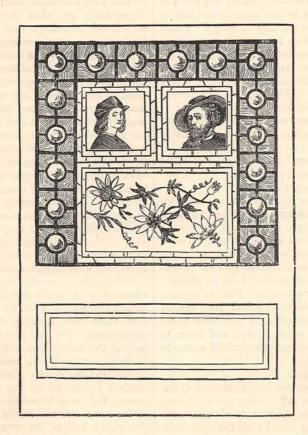
Success depends on the quantity of fat oil employed; it may be tested in the same way as the tracing colour above - mentioned. Glass stain is essentially different in character from enamel colours. The latter remain on the surface of the glass even when fired, but the silver possesses the quality of staining the glass, and during firing becomes incorporated with it; thus a transparent yellow is obtained, while pigments render the glass partially opaque. In staining the square is held obliquely against the light, that the worker may see that he does not spread it beyond the outlines visible from the other side : if he should do so he may remove it with the point of a penknife, or a sharplypointed stick.

must be laid on without streakiness, with a large brush, evenly and decidedly; still it is undesirable to get it too flat-a slight variation in strength adds to the effect. On no account must the stain be used on the same side as the painting colours, for the pigments will destroy its brilliance. The squares are then ready for firing. Not only can quarries be thus treated, but centre pieces of a larger size can be decorated in a like manner. A circular piece of glass may have a design of birds traced on it and shaded; the downy brown plumage appears extremely soft and natural when dexterously performed. Round the circle a bordering of coloured glass adds brightness and warmth; the same border must be repeated around the edge of the blind to match. Heads or figures can be done in the same way, the tracing and shading being carried out on the one side with the brown, and a little stain applied at the back for the hair, and any drapery that is needed. The design

should be simple; it may be little more than a sketch, and yet be effective; all intricate details should be rigidly excluded, the main point is to get strength and grace of form with as few lines as possible, there-



same way as the window-blind, but it is grounded with brown, and diapered for the sake of preserving the privacy indispensable to comfort. Take for example the panel shown in the door on page The flowers are first traced, then the background is filled in, and the pattern picked out with an etching tool; lastly the stain is laid on at the back. Daffodils, buttercups, March marigolds, the cinquefoil, the silver-weed or prince's feather, are all suitable for the oblong pieces, as rather set flowers growing on separate stems are in keeping with the form of the glass. It is not, however, necessary to employ only flowers that are naturally of a yellow colour; in glass decoration great licence is allowed to the worker, and although it is expected of him that his drawing should be correct, he may give colours to certain flowers according to his fancy, and for the sake of harmony, that have never belonged to them by



course, mean that I allow them to go to the stores, but when I find tea out of the tea-caddy goes, I think dismissal is the best course. I know exactly what my consumption is, and should detect at once if they did diminish. When a mistress does not feel sure on these points, she must keep her key-basket always in view.

Servants work all the better for occasional holidays, but it is an inconvenient plan to allow them one day a month, or any particular holidays at stated periods. They generally occur at most inconvenient times, and if you are compelled to keep them at home, it becomes a hardship. It works better to let them ask for holidays, and give them whenever you can.

There must in every house be a place for everything, and it should be some one's duty to see that a supply of string and wrapping paper, ink, pens, writing paper and envelopes are in their right place. Nothing that can possibly have any future use should be thrown away; relegate it to the box-room, where perhaps after seven years you will find a use for it. Let there be a shelf in your box-room; a variety of odds and ends will then be ready to hand, and more easily found.

Keep your periodicals, and bind them for family

reading. Servants enjoy them much. Or send them to some hospital, where they would be a blessing to the suffering. Books of this kind should never be allowed to lie about useless and get lost.

The management of fires during the winter, if arranged with some forethought, need not entail half the hard work on servants that it otherwise does. Small fires are no economy; pile them up twice or three times in the day, and they need only be touched very occasionally. The cinders should be put up, and the hearth dusted with a hearth-broom kept close at hand. They say, you know, that a clean-swept hearth and a good dinner are a wife's best friends, so it is an important matter. But there is a great art in laying a fire; it should be done lightly with dry wood and plenty of draught, and not over-much paper. Above all, see that your chimneys are swept at proper intervals; no good cooking can be done with the chimney choked with soot, and besides there is the danger of fire.

Gas differs so much in price in different parts of the country, that it is difficult to lay down any fixed rule; but if it be at all moderate, during the summer months at all events, a gas-stove will be found a great economy.

HOW TO PAINT ON GLASS.

SECOND PAPER.



DESIGN FOR HALL LAMP.

the style of decoration with coloured glass, the "mosaic enamel" method. This requires greater artistic knowledge than the other, not as far as tracing, &c., are concerned, but as regards the composition of the pieces. It must be executed with due respect to the true principles of art; its adaptability to the form of the

space to be filled, the position it will occupy, its accordance with surroundings, its harmony and general tone of colour, must all be taken into consideration if a good effect is to be secured. No easy task this to the novice. A few hints may be given, but only practice will enable any one to design well; even artists' opinions differ so vastly on the subject of decoration, that no rules can be laid down authoritatively. We must grant, without exception, that no one who desired to execute a painting in the best style would choose glass as the ground on which to work; but, on the other hand, glass is alone suitable when it is requisite to admit light. The only safe plan then is to ornament it with this object in view. Designs filled up with fine details, not to be seen at a short distance,

are obviously in bad taste; they confuse, and render the whole indistinct. "A pure correct style of drawing, united to simple vigorous colouring," says Fromberg, in his "Essay on the Art of Painting on Glass," "are the qualities which the painter on glass must before all things endeavour to attain." Fitness is as important here as in any other kind of decoration, and fitness for glass ornamentation means that true drawing, broad free treatment of the subject, and harmony of colouring shall receive the artist's first attention. The size of the window-space is first measured exactly, a sheet of drawing-paper is then cut rather larger, and on this the subject is sketched. The outlines must be as free from complication and crookedness as possible; two or more green leaves may occupy one portion of green glass, if by this means too minute pieces can be avoided. The tracing brown will sufficiently define their form. The glass which is to bear the representation of a flower will not be cut out so as to follow the curve of each petal, but being somewhat near the shape, they will be marked out in brown, only the tips of each will reach to within an eighth of an inch or so of the edge; the space between every petal will be filled in with brown. In this process we must look upon the brown as a ground colour for those parts round which the lead cannot be bent. Another sketch is now made from the first, giving merely the lead lines; this is termed a cut-drawing, and is used as a guide by the glasscutter who shapes the glasses from it. By thus making a second sketch the first is preserved from damage; it will be used again later on. The cutter lays a sheet of "pot-metal" glass of the colour marked on the copy, and with a diamond cuts it according to the outline; again he takes another coloured sheet for the flowers, and so on. It is sent back to the decorator in loose pieces which he has to put together like a puzzle. Laying the cut-drawing on the table, he places each in its position, until the whole design is apparent; by doing this he easily finds their situation on the first sketch, to which he transfers them one by one. He next traces the lines visible from beneath, with brown, filling up those parts that the leaves and flowers do not cover. In a subject of any importance as to size, the artist can better judge of the effect if he resorts to "sticking up," as the process of fixing the pieces on a sheet of white glass is termed. The entire work can then be placed on an easel, and the light falling through, not on it, will help him to determine how much shadow may be safely placed on it, where the lights should be concentrated, and which parts of the picture would be improved by acquiring a deeper tone. A plate of rolled or clear window glass, large enough to hold the whole design, is laid on the cartoon, and the design traced on it, the coloured pieces put in their places and fixed by means of wax. A little resin, or pitch, is melted with some beeswax in a pipkin, and, while clear and hot, is dropped from the point of a brush, or knife, on to the corners of the several pieces of glass. This causes them to stick to the sheet underneath, which is then placed in a frame of wood, and set up on the easel. The pattern is then traced off on each, care being taken that sufficient space is filled in all round, that the leading may not cut off any part of the subject, and shading is performed. High finish is not a desirable quality in glass-decoration, time is but wasted in working up shadows, or indeed in any glass-painting whatever. On this point M. Chevreuil emphatically gives it as his opinion that fine work is not essential to good work. "It is not necessary for an effective whole that the painted glass, viewed closely, should exhibit fine careful stippling, or blended tints; for with the coloured stained glass for draperies, they must compose a system which compares with painting in flat tints; and certainly we cannot doubt that a painting on glass, executed entirely according to the

system of chiaroscuro, will have the disadvantage, that the finish in the details will entirely disappear at the distance at which the spectator must be placed, and that the view of the whole will be less distinct; for the first condition which must be fulfilled by require a stain of yellow applied at the back; this will be more intense in the darker parts, and modified toward the lights. Thus a fruit of a slightly orange tinge may be cut out of shaded ruby glass of a delicate tint. After filling in round the edge as far as the leading will reach, and shading to make it appear round, it is taken off the glass foundation and stained on the opposite side; the stain is laid all over, but thicker on the darkest parts, then with a badger it is softened off and levelled. It is not, of course, removed for this purpose until the remainder of the painting is accomplished, as the displacement of one section is pretty sure to loosen the others that surround it. The shading colour, umber brown, is mixed with oil and turpentine, it may then be passed over the tracing colour without fear of the latter washing up during the operation. Flesh tint is represented by a faint wash of red oxide. Matting is also employed before painting, to cause the colours to adhere more easily to the glass, as they readily wash up from the polished surface. A little painting colour is used as before described to form a foundation on which to work; the transparency of the glass must, however, be preserved. Some workers use only a wash of oil of turpentine, put on with a flat brush, but whichever method is followed it is necessary to level the ground by passing a badger across it in various directions, until it is quite smooth and as thin as possible. For water-colours a mat is not needed. but if for any reason it is employed, it must be composed of a glass-painting colour mixed with water. A different effect is produced by laying a water mat on the glass, and while still wet, dabbling it with a cut

every work of art intended to attract the eye, is that it

be presented without confusion, and as distinctly as

possible." If any portion of the subject needs a coat

of colour it is applied to the reverse side of the glass;

such may be the case with regard to certain portions

of the drapery, or the flesh. A stronger tone may be

given to work already done which may not be con-

sidered dark enough by matting the reverse side;

when the colour has the proper proportion of gum

added to it, it will leave a deposit on the surface,

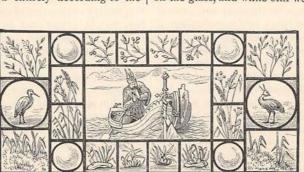
which will produce the deeper tone. Matting is done

by grinding some painting colour on the palette, with

the addition of a few drops of solution of gum; this

is washed thinly over the glass with a flat brush, and

is then smoothed with a badger. Other parts may



DESIGN FOR FAN-LIGHT.

badger-hair pencil; this produces a kind of granulated ground that is better adapted to the artist's requirements, at times, than a flat one.

As to the choice between oil and water-colour, each is good in its way. Oils possess more consistency

consequently give sharper edges, they are less liquid and adhere more firmly, painting insufficiently strong may be re-touched, while a level tint can be more readily attained by their use. For large surfaces, oil colours may therefore be considered superior. It is requisite in some work that lights should be taken out. Hog's-hair brushes are, for this purpose, burnt down, by laying them on red-hot iron sideways; the frizzled ends are afterwards rubbed on emery-paper.

When a mat has been laid, the scrub is drawn across

-lightly or heavily according as it is desired to remove little or much of the mat. The scrubs should vary in size that the worker may have a suitable one to use for each breadth of light. Much depends, naturally, upon the gum employed in the mat, less being required for a light than for a dark one. To diaper backgrounds or draperies, which occasionally enhances the beauty of the picture if it is not overdone, one plan is to lay the pattern under the glass on which the outlines and folds have been already painted, and to trace it off as usual; the second, and quicker one, is to lay a mat and to pick out the pattern with a hard pointed stick.

Enamel-painting is carried out on glass that bears only a slight tinge of colour; larger pieces of glass are employed, but even they must not be too big,

because of the difficulty of firing them without breakage. Painting with enamel colours can be performed in three ways—the design can be traced in brown, as before shown, and the colours applied at the back; or the glass may be treated as other materials, and painted only on the front side; or, again, the two methods can be united. Colours may be put on one side, and stain on the other, for giving certain rich effects; for instance, purple in front and yellow at the back will combine to impart a gorgeous scarlet.

The work should be painted on an easel, made of a frame supported by wooden rests. The part of the table on which it stands is covered with white paper, to reflect the light, and no object should remain on it to distract the eye of the worker; he should also choose his seat opposite the window, so that the light may fall directly through the glass. The colours are few in number. Umber brown is a useful warm tint for shading. Chinese red will shade flesh in conjunction with browns. There are three blues from which to choose. The list given by Mr. Hancock is as follows:— Tracing brown, Ancient brown, umber brown, Vandyke brown, hair-brown, sepia, Chinese

red, flesh-red, tracing black, strong black, soft black, black shading, blue, green, crimson, purple, pink, white mat, and orange. The last-named colour will not bear mixing with red.

The great objection to enamel-painting is that it destroys the transparency of the glass, thereby failing to comply with the laws of art, inasmuch as it unfits the window for fulfilling its proper function, by rendering the glass semi-opaque, and in consequence excluding to some extent the light. "Mere imitation is not ornamentation, and is no more art in the higher sense of the term than writing is itself literature, for in order to the production of ornament there must be at least adaptation." Glass windows should not be poor imitations of oil pictures, glass

transparencies as they have been called, only bad at the best, from the incongruousness of the ground to the purpose; for all ornamentation to be artistic must accord in every respect with the particular material upon which it is placed. Glass colours are best employed when applied sparingly, in conjunction with coloured glass in a mosaic piece; they cannot be condemned in toto, for effects are secured by them which are unobtainable in any other way, and that artist shows the greatest wisdom who uses with discretion all the means that lie within his power to produce the finest result; only the student must take heed lest he should be led away from simplicity and true beauty by the apparent facility that colours afford him to imitate nature, and thus he may lose sight of that which should be



his first object—namely, decorative work that is simply a part of the architectural whole. Among the various glasses that we mentioned at the commencement was "flashed glass." This is useful for a particular kind of work. Glittering jewels on crown or robe can be represented in this glass. "Overlaid" is another name for the same—it is white glass covered with a thin layer on one side of "pot-metal." By means of fluoric acid, which possesses the quality of decomposing glass, the pattern or jewels are left contrasted on a coloured ground. The white portions may be afterwards variously coloured on the opposite side to give yet another effect. More or less of the surface may be removed at pleasure. The tracing is done with Japan black on the coloured layer; when dry, it

is bordered all round with Russian tallow, then the acid is poured into the enclosed space. After the acid has remained long enough to do its work it is poured away, the Japan black is removed with spirits of turpentine, and the pattern will be found clearly apparent upon the coloured ground. Another style of using "flashed glass" is to stain the back or white side—thus a green is formed by staining blue glass with the yellow, a scarlet by staining red in the same manner.

All glass-painting is sent to the kiln to be fired when it is finished; if it is retouched afterwards it will then require a second firing. The glazier's hand gives the finishing strokes to the work. He leads each piece together until the design is complete and ready to be placed in position.

HIS OWN SHADOW.

A STORY IN TWO PARTS.

PART THE FIRST.

HE month of December some years ago was characterised by a series of heavy gales, and the Christmastide was dull and cheerless, and completely devoid of those beautiful gifts of Nature with which this happy period of the year is wont to be associated.

I was at that time a clerk in the office of a firm of solicitors practising in Liverpool. It matters not for the purposes of this story by what firm I was employed; suffice it to say that they stood high in the profession. My salary was not by any means large, but, with a small income derived from a sum invested in New Three per Cent. Annuities which I drew on behalf of my wife, we managed to live comfortably enough, our tastes and inclinations being in harmony. For the sake of my wife and our two children I had for some years resided in a village a few miles from the office where I was engaged during the day, going to and fro by omnibus or walking as it suited me.

We were very sociable in the village, and, during our residence there, my wife and I had made several friends among those in our own social position, and a few of us men used to meet in the evening, twice a week, in the parlour of a little farm-house tenanted by one of our number. By degrees we came to look upon ourselves as an established club or society, and consequently to be regular in our attendance on "club" nights.

And on a cold blustering winter's night what a snuggery our meeting-place was! A somewhat long, low room, with the door at one end and an old open fire-place at the other; on the right hand as you entered, a large casemated window closed with folding shutters, which were in turn secured by a flat iron bar placed across them with an upward slope from left to right, and over the whole window-recess a pair of dark, heavy, old-fashioned curtains.

One wild, wintry evening, destined to be ever memorable to me, we were in our accustomed places and, in spite of wind and weather, the most perfect social enjoyment prevailed.

In the corner, on one side of the fire, was old Tom Humbleton, the saddler, who was at this time about sixty years of age. He had a peculiar stoop, more in his back than his shoulders, which no doubt had been acquired by long years spent at his trade. Opposite to old Tom was our village postmaster, Mr. James Gardner. In addition to those already enumerated, there were Hunter, butler to Sir Thomas Grateman, squire of the parish; Jackson the linendraper; myself, William Harris; and John Strangways, our genial host, who invariably occupied the centre chair in the circle. On the night in question conversation was drowned by the whistling of the wind, to which we all sat listening for some time.

"What's doing up at the Hall, Hunter?" asked Mr. Jackson, breaking the silence at length. "I did not see Sir Thomas in church on Sunday."

"Sir Thomas has been in London," replied the butler.

"But he'll be down to-morrow though," put in Gardner; "for he's a witness in the burglary case."

This was in allusion to a daring burglary which had been committed at the Hall a few weeks before this conversation took place, and the supposed culprit, being then in custody, was to be put on his trial at the ensuing assizes at Liverpool. The firm to whose service I was attached acted as Sir Thomas's solicitors, so I was naturally interested in the circumstances of the case, and as our circle was looked upon by us as being of a strictly confidential character, no restraint was placed upon our conversation.

"Did you see the man, Hunter?" I asked.

"Certainly I did," said Hunter; "though not as plain as I see you. It must have been," he continued, as we all hitched our chairs slightly forward in order to catch every word—"It must have been about twelve o'clock at night when the mischief was done.