Technical Bookbinding.

CHAPTER IX.—TREATING OF EDGES.

(Continued from page 24.)

Under the above heading it is proposed to give directions for colouring edges, of any chosen tint or shade, sprinkling them with one or more colours, marbling them in various popular patterns or designs, gilding, or otherwise ornamenting them, and finally burnishing them.

A volume with snow-white edges, smoothly and evenly cut, and possessing the burnished appearance which the plough or cutting machine knife invariably imparts, is in itself a treasure. Alas, however, white edges soon get soiled, thumb and finger marks appear, dust settles on the top and fore-edge, and the spotless purity disappears, leaving the book a stained and unsightly object. To obviate this it has been the custom to colour, sprinkle, marble, or gild the edges, which also adds to the finish and beauty of the binding.

The colours mostly used are blue, brown, green, red, and yellow; as these can be procured of all qualities and shades from any drysalter, artists’ colourman, or bookbinders, material dealer, it is not thought necessary to refer to the mode of manufacturing them. None but the best colours should be used by bookbinders. To properly prepare these it is necessary to grind the colours very fine in water, on a marble slab with a muller. The colours are then placed in separate vessels, and paste and water added until the consistency required for use is obtained. Some binders add two or three drops of oil, and about the same small quantity of vinegar and water to the paste, in the belief that it produces a better edge.

In order to colour the edges equally all over, the boards at the head of the volume must be beaten even with the edges, and the book placed firmly on a cheek of the press, or the front of the work bench, then gripping the back of the volume in the left hand, the chosen colour should be applied with a small sponge, taking care to pass it evenly over the edge, proceeding towards the back one way, and then reversing its passage towards the gutter; this will prevent clotting, or an unequal quantity of colour lodging at the angles of the fore-edge. After both the top and bottom edges have been thus treated, the fore edge should be laid open from the boards, and a runner held firm above to prevent the colour searching or running into the book. A dozen volumes, more or less, according to their thickness, may be thus coloured at one operation by piling them on each other. When a number are done at once it is better to place the books in the laying-press, and give them a nip, not too tight; this will prevent the colour entering between the leaves. Few things in a book are more unsightly than when the colour having properly stained the edges of the leaves, has been allowed to run in between the pages and stain them irregularly, perhaps to the depth of the sixteenth of an inch. When the colour is dry the edges may be burnished with the tooth agate, and then covered with paper until the book is passed over to the finisher for covering, lettering, and ornamenting.

The beautiful red edges many modern books possess, especially some of the editions of “Hymns Ancient and Modern,” recently issued by Messrs. W. Clowes and Sons, Limited, are remarkable for their brilliancy of colour, and the high state of polish they have received
at the hands of the burnisher. Another instance of modern good workmanship may be found in the parti-coloured edges of the "London Post Office Directory," published by Messrs. Kelly. Here the various contrasting colours indicate the different sections of the immense compilation with precision, and help the commercial man who glories in its precise information, to speedily trace the object of his search. Surely had the learned Dr. Thomas Frognall Dibdin have lived to see these perfect specimens of edge colouring, he would have written a eulogistic paragraph in their honour.

When the edges are to be sprinkled, it is customary to place a number of volumes together with a board at top and bottom, and then tie them securely, or place them in the laying-press. The fore-edge should be sprinkled first. Not too large a brush, perfectly clean, should be dipped into the vessel containing the required colour, and well beaten over such vessel until the heavier spots of colour are freed from the brush, and only a fine rain-like sprinkle is emitted; during this procedure the edges ought to be covered with a piece of paper, to prevent them receiving a big splash or blot of colour. With the brush in his right hand, and the pin in his left, the binder holding them at a proper distance above the book, after having removed the paper covering, commences to sprinkle the edges, beating the brush lightly at first, and more heavily as he proceeds, taking every possible care to make the spots as fine as pin-points. In fact the beauty of a sprinkled edge greatly depends upon the uniformity in size and minuteness of the spots. Sometimes two or more colours are sprinkled over the edges. The workman’s good taste should guide him in choosing the most effective combinations; he should never forget an old master’s advice to a young artist, “Mix your colours with brains.” The fore-edge having been thus treated, the heads and tails are next served in a similar way, and the batch of books left to dry.

A very rich, charming, yet chaste effect is produced by adding a gold sprinkle to the edges of a volume after the colour or colours have dried. An old receipt for making a gold liquid for this purpose is as follows: “Take a book of gold leaf, place the metal leaves in a mortar together with half-an-ounce of honey, pound them with a pestle until the go’d is very fine, then add half-a-pint of clear water, and mix them well; after settling, pour the water off and put in more until the honey is all diluted and extracted, and nothing is left but the gold; then mix one grain of oxymuriate of mercury (corrosive sublimate), with a teaspoonful of spirits of wine, and when dissolved put the same, with a little thick gum water, to the gold, and bottle it, always shaking it well before using.” In the present day, when so many beautiful shades of gold, silver, and copper bronzes are to be obtained, doubtless a finer and more sheen-line sprinkle can be produced, than by the leaf-gold process adopted by our predecessors. When dry, the edges must be burnished to as high a polish as possible.

To marble the edges of a volume properly is a difficult task, and requires the exercise of much care, even by those who have had great practice. Indeed, marbling is generally carried on as a distinct part of the craft, especially in large cities and towns. Pursuing the plan hitherto adopted, it is intended, for the benefit and guidance of binders in small provincial towns, to treat of book-marbling as a part of the art such gentlemen may of sheer necessity be compelled to exercise.

In page 157, Vol. II., will be found a description of the method by which the edges of account books are generally marbled; that method, however, does not quite apply in the present instance, inasmuch as the ingredients constituting the “size” are different. Readers
would do well, notwithstanding this difference, to re-peruse the page alluded to, as there are many points which equally apply to both methods.

The "size" is made by placing in a pipkin or other clean vessel a quantity of linseed, and pouring over it rain or filtered water in a boiling state, stirring the seed round and round with a clean stick, till the size is of sufficient consistency to bear the colours on its surface. Should the size be too thick, which a trial will enable the workman to judge, add more boiling water, if too thin more seed; the latter should be obviated as much as possible by not putting too much water to the seed at first, as the size getting cool will not easily assimilate with that which is added.

The operator will next take a piece of bees'-wax of the purest quality, and mincing it very fine, place it in a vase on a slow fire until it is melted; he should then pour into the molten wax, very gradually, some spirits of turpentine, stirring them well together till they acquire the consistency of honey.

Vegetable colours should be used in preference to mineral; the latter being heavy will sink to the bottom of the size. When the colours are chosen, according to the pattern to be produced, they should be ground as fine as possible in rain or filtered water, the perfection of the marbling being accelerated by the clearness and brightness of the colours. Two or three drops of the wax prepared as above described, according to the quantity of colour to be ground, must be well worked in during this operation. The wax will make the colour hold, besides giving a finer gloss to the edge at the time of burnishing.

Each colour as it is ground should be placed in a separate cup or basin, with a different brush, or camel's-hair pencil to each. A small quantity of ox-gall and water should then be added to the colours, and well stirred in with the brush. If the chosen pattern be that which is known as Shell Marble, this will be all that is necessary for the vein colours, or those to be thrown first on the size. To the upper ones, or those intended to drive the former into veins, and form the shell, two or three drops of boiled linseed oil should be added, not neglecting to mix them well by the aid of the brush, so that they may be fully incorporated, or blended with the colours.

Of course, the trough must be watertight and perfectly clean, then the size, now cold, should be strained, and carefully poured into the trough, otherwise some of the seed may escape into the trough. Next an experiment or two should be made to ascertain if the colours act as they ought. A little of each colour is taken up by its brush, and cast on the size; this is best done by tapping the brushes on the left forefinger, till the drops of colour fall in the required order: should they remain in stationary clots, and not expand a little over the surface of the size, more ox-gall must be added; if they spread too much, it will be necessary to add more unmixed colour. A similar test should be applied to the upper colours; but in this case more oil must be added if the shell does not freely develop, and more unmixed colour if white spots or breaks are caused by too much oil. The trials must be made with blank paper, and the face of the size thoroughly cleared of colour after each of the experiments.

Having succeeded by these tests in ensuring that the colours work well and freely, the whole of the surface of the size may now be covered with the Shell Marble, the vein colours to be thrown on first, then the upper ones.

[To be continued.]
It is very interesting to watch the actions of the marbling colours on the surface of the size, how one colour prepared with oil will assert its power, and drive those mixed only with ox-gall and water into veins, forks, and lines of almost similar appearance, yet of infinite variety. Well, all being satisfactorily arranged, the operator, after having beaten the boards at the head even with the edge, holds the leaves together, and dips them into the size. The action is momentary, the head being instantly withdrawn, to ascertain if any size adheres to the colour on the edge of the book; if so, it must be immediately blown or shaken off, or it may possibly run into and spoil the interior of the volume. The tail is next served in a similar manner. To successfully marble the fore-edge, the boards should be laid back, and the edge flattened on the press, holding the leaves firmly at each end, taking the colour with the same precaution, on a kind of touch-and-go principle, removing superfluous size as before directed, and then replacing the boards.

There are the Spanish Marble, the Anglo-Dutch Marble, and a host of others too numerous to mention, but the plan of manipulating each is in most details similar to that here described. The main points are, to see to the strength and purity of the size, to pay attention to the ground and body colours, and to be sure that they are thrown on the size in the order the required pattern demands. It is also essential to remember that all surplus colours should be removed from the surface of the size by means of waste paper after each dipping. The reader will recollect that the Anglo-Dutch Marble pattern is worked by means of a marbling comb.

Gilding the edges is unmistakably the best mode of protecting them from external injury and damp, neither do finger-marks appear to such disadvantage as upon the edges when coloured, sprinkled or marbled. When the three edges are to be gilded, the fore-edge should be treated first. The book should be placed between boards even with the edge of the laying press, and then the press should be screwed up extremely tight. The operator should next take a steel scraper, an instrument specially made for the work, sometimes being the blade of an elastic steel knife, at others a piece of clock spring, but either of them should be rounded on one side and flat on the other, so that if any part of the surface of the edge be even slightly unequal, the work of levelling it may be the more effectually executed. After the edge has been thoroughly scraped, it should be well burnished with the agate, and then coloured over with a fine red powder thoroughly ground in soap. This colour should be rubbed dry immediately by means of fine paper shavings, and well burnished again. The object of colouring is to give a deeper appearance to the gilding, besides which it will render imperceptible any slight defect that the white edge, however carefully scraped and burnished, will sometimes possess.

The gilder will now require his gold cushion, an article formed of an oblong piece of board covered with calf, the flesh or inside part uppermost, and the space between it and the board evenly stuffed, either with layers of flannel or pieces of wadding or wool. On this cushion he will cut the gold-leaf in strips to the width of the edge required, using one or more strips according to the length of the edge. There is a special instrument used for
cutting the leaf; it is called the "gold-knife," it is usually from eight to ten inches long, has a short handle, and the blade is very highly tempered and sharpened on both sides; it may be compared to an artist's palette knife.

When a sufficiency of strips are cut, each one is taken off the cushion on either a trindle or a tip, or if these be not at hand, a small piece of stoutish paper folded with one smooth edge will answer the purpose. The removal of the gold from the cushion is the more easily accomplished by rubbing the trindle on the head, then laying it on the strip and gently pressing upon it; this will attach the leaf at once.

Some gold size is next applied to the book's edge by means of a large camel-hair pencil, and the gold immediately placed in position. Should more than one strip be required for the length of the edge, care must be taken that no gap is left between them; if this should happen, or if any breakage in the leaf occurs, the places should be instantly supplied with smaller pieces, or oddments, which can be put, or rather dabbed on, with cotton wool.

Prepared gold size may be purchased from any bookbinder's sundryman, but should any reader not be able to procure the preparation in his town or immediate neighbourhood, a size that will answer his purpose can be made from writing parchment, by boiling it well and adding six to eight drops of vitriol to each cupful. This should be applied to the book's edge when warm. A more simple and quite as effective a mode of promptly preparing a gold size is by well beating together the white of an egg in three times its weight of water. The more size required the more eggs and water should be beaten up.

When the workman has ascertained that the fore-edge has been completely covered with the leaf, he will let the edge dry, after which he must proceed to lightly and carefully burnish it, in order to avoid rubbing any of the gold off. It is best to place a piece of tissue paper over the gold at first and apply the burnisher on that, but afterwards the edge itself must be burnished until it is uniformly clear and bright. The head and tail of the volume should then be gilded in the same manner and with equal care. It is best that the operator should place the books in the laying press with their backs towards him.

In olden times it was customary to gild over other than red coloured edges, and very pretty effects were obtained. A bright green under the gold, for instance, was thought to be very beautiful; the gold, whilst it toned the colour, did not hide it altogether, but its own richness and brilliancy became more dazzling and charming through the verdant tints which faintly flashed or glimmered through it. Another form of ornamenting edges was by working flowers or designs by means of two different shades of leaf, a deep one and a light one. The light gold being placed on the edges in manner described, a coat of size was rapidly and gently passed over it. This second coat of size when dry was rubbed over with palm oil, and the deep-coloured leaf used for the flower or design was laid on with chosen pallets or ornamented tools, which were first warmed at the finishing stove. This was called "gilding à la antique."

Sometimes volumes were gilded after their edges had been previously marbled. In such cases the edges were not overcharged with colour. After pressing and burnishing, the size was laid on evenly and lightly, so as not to disturb the colours or design of the marble pattern, and then the gold was instantly put down and finished off in the usual manner. The marble showed through the gold, and looked superbly beautiful. Dr. Dibdin in his
"Bibliographer's Decameron," in speaking of this style of edge decoration, says it is "the very luxury, the ne plus ultra, of the Bibliopegistic art."

Many references have been made to the cutting-press and plough, which, notwithstanding the numerous cutting machines now in use, are yet almost indispensable in a well-regulated bindery, and a downright necessity in a small workshop. Familiar as every binder is to their shape and utility, it is thought advisable, in order to make these papers as complete as possible, to give an illustration of the modern one now supplied by Messrs. Hughes and Kimber, and most other makers. A laying-press is similar to a cutting-press, but has no runners for the plough. Small binders use one press for both purposes, by merely turning the press over, runners downwards.

![Cutting-Press, with Plough, Knife, and Pin.](image)

**Chapter X.—Registers and Headbands.**

Registers are ribbons fastened under the headband of a book and left hanging out at the foot, to denote the place where the reader may have left off. They are, in fact, "bookmarks," only they are attached to the volume when it is bound, instead of being used loose as is now commonly the case. Narrow ribbon registers, which are mostly only attached to small volumes, are seldom placed till after the binding is quite complete. In the case of volumes of a large size, and which are likely to be in frequent use, it is necessary to attach them under the headband, and glue one of the ends on the back of the book, bring the other down between the leaves, and turning the parts intended to hang out at the bottom into the book again to preserve them from being soiled while the work is being completed. Gold fringe is sometimes attached to the ends of the broader registers, which materially adds to the beauty and ornament of the binding.

Headbands are ornaments of coloured thread or silk, placed at both head and tail of a book, and worked in close to the back; they are not only ornamental but are useful, inasmuch as they serve to support that part of the cover which projects above or below the edges, and according to the squares of the boards, give a more finished appearance to the entire volume. The headband must equal the square allowed for the boards. For work known as "extra," and volumes bound for strength and durability, the bands are made of thin board and parchment pasted together and cut into strips of the width required. For
ordinary work the strips sometimes have cloth pasted round them, or common thread. For “extra” work, coloured silk is used, and oftentimes gold and silver thread.

There are two kinds of headbands, the single and the double. To make a single one, it is necessary to procure two lengths of thread of different colours, then pass one length of thread through the eye of a long needle and tie the ends of the two together. If red and white have been selected, the white thread should be attached to the needle, which should be placed inside the volume five or so leaves from the left side and then forced out at the back immediately beneath the chain or kettle stitch of the sewing; the thread should be drawn through until it is stopped by the knot, which will be hidden in the sheet. The needle must then be passed a second time in or near the same place, and again drawn through, leaving a loop or curl under which the strip of prepared band is placed; the thread should then be drawn tight, so that it may hold the band firmly in its place. The band, prior to being thus secured should be bent to the shape of the curve of the book’s back. The red thread is now taken up and brought from the left to the right—crossed above the white thread, passed under the band, and brought round to the front again, and fastened by passing the white thread over it in the same way. Care should be taken that the “bead” by these crossings touch the edge of the volume. In alternatingly repeating these crossings of the threads, each time passing under the band, a complete covering to the strips of thin board and parchment will be made; but it will be found necessary to draw the needle and thread through the back occasionally, as before directed, once only in as many places as the thickness of the book may require. This will securely fasten the band. When the band is completely covered it should be fastened off by giving it a double tack on the right side and making the finishing knot at the back. The superfluous side-ends must be cut off near the silk or thread, and the band should be bent a trifle in an upward direction to prevent the work slipping off prior to the operation of covering with leather or cloth.

The double headband is made of silk of various colours, and differs from the single both in being composed of two bands—a large and a small one—and in the mode of passing the silk. It is commenced in the same way as the single, but when the bands are fastened, the smaller above the larger, the red silk is taken with the right hand, brought out under the upper or small one, carried over it, brought out again over the large band, and the “bead” formed, as above directed, near to the edge of the book. The white silk is then passed in the same way, and so on alternately, until the band is finished.

Gold and silver headbands, both single and double, are made in the same way; the difference being that gold and silver thread are employed instead of silk or cotton. The thread must be well tightened at the head.

The ribbon headband differs but little from the others. A number of colours may be used, but they are passed several times round instead of alternately, which assists in forming the “bead” at each turn. The under threads must be always kept from sight. Each colour is passed in a similar manner as many, or even more, times than the former. This will produce a beautiful band, having the appearance of a series of strips of narrow coloured ribbon contrasted. Hence its name. The more colours used the better, so long as taste is displayed in arranging them harmoniously.

For very common work the headband is merely made of pipes of paper well rolled between two boards after being slightly parted on the inside.

(To be continued).
Technical Bookbinding.

Chapter XI.—Raised Bands, Open backs, &c.

(Continued from page 56.)

Not many of the volumes bound now-a-days are ordered to be ornamented with raised bands on the back; yet some of the old books to be met with in public libraries and private collections are possessed of them, and present the appearance of great strength and beauty.

A customer, however, may possibly desire to have a book bound in this manner, in order to match a set of volumes, or from taste and love of the style. It will, then, be as well to give some few details as to how the bands are made and fixed on the backs.

The back of the book must be marked at equal distances with the compasses, or from a pattern cut out in pasteboard. The bands themselves are generally pieces of fine, thick leather or pasteboard—a stout leather boot-lace with a flat back and rounded front cut to the width of the back will answer admirably. The back of the book is then glued again and the bands placed by the flat part, at the places marked off by the compasses or indicated by the pattern. When the glue is dry, cut off each part of the bands, if any, which might project over the sides, and when covering care must be taken to firmly press the leather over the back and bands, grooving it tightly on both sides of each band with a folding-stick, to prevent bulges or wrinkles becoming apparent when the back covering is completely affixed and dry.

When a loose back is ordered, it is necessary to first line the back of the volume with cartridge paper. To accomplish this effectually, the book should be placed in the laying-press, fore-edge downwards. All being in a precise position, the back must be treated to a light coating of glue, and the cartridge, having been previously cut as near to the size as possible, laid on evenly and rubbed closely and firmly with the folding-stick. Should, through this rubbing process, the paper expand when the glue is dry, the top and bottom and the side edges must be levelly trimmed with the shears. The headband should next be rubbed close to the back, which must be again slightly glued. If it is desired to make the back stronger, one or more pieces of cartridge paper may be glued on in the same way before trimming. However, to allow the back to open with greater freedom, it will not be necessary to trim so closely as above indicated, but a little paper may be left projecting on each side; these overlapping pieces must be folded evenly at the edges. Such folded overlaps should be glued on the inside and rubbed well together, and the headband set with the folding-stick. All will then be ready for the next operation.

Chapter XII.—Covering.

Sheepskin and calf for common work ought to be soaked in clear cold water, then the water wrung out by the hands or by passing the skin through a laundry-maid’s “wring,” and afterwards extending them smoothly on the table, rough side of the skin downwards, preparatory to cutting out. For law books the leather or vellum need not be steeped in water; they may be cut to size when dry, then damped with a sponge, and each cover laid on the other and a board and weight placed upon them in order to preserve the moisture. They must be laid down evenly, without any twists, otherwise there will be marks, wrinkles, or ribs in the bound covers. This plan is also advisable for all extra calf-work, the colours taking
better and far more uniformly. Morocco and roan must not be wetted at all, otherwise the colour or stain would be impaired or the grain destroyed. Russia leather may be steeped in clean warm water; then the skin should be laid out smoothly on a table and the water expressed by rubbing the skin well with a folding-stick, working from left to right and then from top to bottom, at the same time carefully avoiding making creases, as such are not easily afterwards eradicated.

The skins of leather used by bookbinders are specially prepared, and dressed in a peculiar manner. They are something like the leather used by glove-makers, being very soft and of uniform thickness throughout, and are stained in a great variety of tints, shades, and colours. It is not proposed to give details of the methods adopted for staining leather; bookbinders can procure skins of any shade they require, in large or small quantities, from many large dealers who keep them in stock.

An important operation, however, must be described, namely, the best method of cutting out the covers so as to effect economy. In a well-directed bindery, it is customary to cut out and preserve milled board patterns of all the standard sizes of books, from the smallest to the largest folded section of a foolscap, post-crown, demy, royal, super-royal, and their duplicates in paper. This is an excellent plan, and should be generally adopted.

Supposing the skin to be laid on the cutting-table, the pattern of the size required should be taken from store and placed on the skin, and then shifted and shifted again, until it is found how many covers of the required size the skin will yield, always allowing about half-an-inch all round for paring and turning in. This system will prevent much waste of leather. There are, however, sure to be many oddments and fragments: these need not be wasted; they should be preserved in a drawer, as they often prove useful in furnishing backs and corner pieces for volumes which are to be half-bound with paper or cloth sides.

It is now necessary to pare round the edges. Each cover is taken singly, if there be more than one, and laid on a marble slab, the inner side of the leather upwards, and then the operator, with his long knife, must commence paring by moving the knife forward diagonally from about half-an-inch of the edge, gradually and evenly down to the slab. It is important that the cover be held firmly by the left hand, otherwise the knife is apt to cut into it. It is best to first mark the cover on each side, by making a straight line with a pencil, showing exactly where the paring should begin. This will prevent such an undesirable occurrence. Again, care must be taken when paring not to notch the edges, or their strength will be deteriorated.

Morocco, roan, and rough calf not requiring to be wetted, there is greater difficulty in paring their edges than in operating on other leathers; but this may be overcome by damping with a sponge the half-inch edges to be pared, taking care the moisture does not infringe beyond the line marked.

In placing the cover on the volume, no matter what material—silk velvet, leather, or cloth—be used, the method of affixing the cover to the sides and back is the same. The inside of the cover is well pasted over and then placed on the volume. If those skins which have been wetted become dry before required for use, they must be sponged with clear water. The cover should be laid on a board, exterior downward, and the inner side, i.e., the one to be attached to the boards, pasted well and evenly all over, with not too thick a coating, but just sufficient to make it adhere to the back and boards.
The cover should now be placed on a table or milled-board, previously overlaid with clean white paper, and then the volume, taken in both hands, the squares at head and tail equally adjusted and placed on the nearest side of it, in such a position that the back of the volume, which should be away from the workman, will be exactly in the middle. The other part of the cover is brought over both the back and top side, care being observed whilst so doing not to disarrange the squares. The entire cover is then drawn tightly over the back and sides with the open hands, and rubbed vigorously or lightly, according to circumstances, with a smooth folding-stick so as to obliterate any imperfection in the shape of a crease or wrinkle which may perchance show itself. It is necessary to draw on the cover as tightly as possible, and to see that it adheres closely and firmly to all parts of the book. In the operation of rubbing, the superfluous paste will be squeezed outwards towards the edges.

The volume may now be opened, the superabundant paste cleaned off and the side projecting pieces of the cover which had been previously pared turned in; the edge of the boards ought to be rubbed perfectly square, and should any crease appear in the turnovers they must be eradicated with the folder.

The volume must next be taken by the fore-edge and placed in an upright position upon the table with the boards extended. The pared piece at the heads may then be turned in with the hands, one on each side, and rubbed down very smoothly. To do this effectually at the head of the back it is best to force the boards close to the headband; and then, folding the cover over and into the back with the thumb, to draw it in as tightly as the operator can; it is not easy to prevent a crease whilst doing this, but when dry and the boards resume their proper position such defects are hidden. The tail ends of the cover must now be treated in a similar way. If the back of the book be an open one, the loose part of the fold previously made must be covered over with leather at both head and tail, in the same way as the boards at sides, and top and bottom edges.

Neatness is a great desideratum, consequently, all the edges being properly turned in and smoothed, the next thing to be done is to cut with the shears any small overlapping corners. This can be done whilst the book is kept open, mitering the angles, and thus preventing any unsightly projections. The thumb-nail and folder may here be used to great advantage. The edge of the folding-stick ought also to be well pressed into the joints between the back and sides, in order to make the covers adhere more firmly, since the back, being somewhat springy, may possibly prevent the leather from attaching itself to the boards at each side near the grooves.

Now, also, is the time to make any reparations. Supposing the headband to have been correctly set, and the projecting leather cap adjusted, the squares may become deranged; this can be remedied by a judicious use of the folder. If any defect in the leather becomes apparent the piece should be deftly removed and a pared piece substituted, taking precautionary measures that the patch, if it may be so termed, is quite imperceptible.

The volume may now be placed in the nipping-press between two boards, not flat boards, but boards thicker at one end than the other; the thick side being placed in the joints between the sides and back of the book will hold it and further accelerate the adhesion of the leather to the joints. When removed from the press, the back ought to be again rubbed with the folder, any disarrangement of the headband rectified, and the entire volume left to dry.

[To be continued.]
"The Ingoldsby Legends" comes next in the order of merit. The binding consists of good solid half-calf, with purple cloth sides. It is an ordinary full-gilt back, with marbled edges. Generally, it is a creditable specimen.

"Marriage of Convenience" is bound in half-green-calf back, with gilt edges and mitred work.

"Flowers and Weed" is a half-morocco in cheap library binding, with marbled edges. The specimens sent in for competition give rise to several questions worthy of consideration. We simply note them as they occurred to us:

Why is it that out of the six volumes named four had stuck on head-bands? Surely the improved result gained by sticking to the old method of working the head-band would warrant the small extra labour and consequent outlay.

Why sew on five bands and draw in on three? One sample sent in was sewn all along on five bands and drawn in on three. Another was sewn in on five bands, sewn two sheets on, and drawn in on three.

Why not pay more attention to the squares, which in two instances were very irregular? We may also mention that one volume, upon being opened, emitted such musical strains that we thought ourselves possessed of a musical-box.

**Our Second Competition.**

Our second competition will be for whole-bound calf-work. It must not be hand-coloured calf, as there will be another competition later for that.

The awards will be made upon the consideration of the book as a whole, and not upon the amount of gold-tooling covering the back. We would again impress upon competitors the necessity of good forwarding.

The conditions will remain as before, viz:—

Competitors must send in their work to the Editor, *The Bookbinder*, 13, Charing Cross, on or before the 20th of January, accompanied by a letter from employers guaranteeing that the work was done in their shop and by the persons sending in their names as competitors.

Employers will not be allowed to compete.

Competitors must pay cost of carriage to and fro.

The book may be forwarded by one man and finished by another; but both names must be given.

Three leading London binders will adjudge upon the work sent in, and a sum of 10s. will be awarded the most creditable specimen. A free copy of *The Bookbinder* for twelve months will be sent to those who are highly commended.

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**Technical Bookbinding.**

(*Continued from page 72*).

Morocco, velvet, silk, and coloured calf-covers, it will be readily understood, require the very greatest care and attention in manipulation; stains must be avoided by every possible means, and the colours or shades must not be spoiled or even deteriorated whilst being stretched upon the boards or turned in; morocco covers must not be drawn on too tight, or rubbed down with the folding-stick, as the grain of the material might probably be almost, if not entirely, obliterated. To prevent damaging coloured calf, the covers should be drawn on
by the hands, both sides at the same time; the work-table had better be covered with a clean cloth or a piece of green baize, and the operator must have clean hands, or he may leave thumb- and finger-marks on the delicate material, which cannot afterwards be easily eradicated. Silk covers should be previously prepared by pasting a piece of paper over them; they should then be left to dry, as when the paper is again pasted for covering the colour of the silk will not be affected, neither will wrinkles make their appearance. From the peculiar texture of velvet, it is necessary when covering only to rub one way with the folding-stick, that one way being in the direction of the nap. One side of the book must be glued first, and laid upon the velvet, then drawn evenly and smoothly on towards the back; next, the back itself should be glued and the velvet drawn over it; then the other side should be treated in a similar manner, and finally the edges turned in. By adopting this method the whole cover will lie perfectly smooth, which it would not do if the velvet were drawn on in the opposite direction of the grain. Care should be taken to ascertain the direction of the grain or nap when cutting out the covers. An upward grain is contrary to all good taste, a side-wise grain is equally so, besides being ridiculous; the grain should always be in a downward direction.

*Half-Binding.*—This term is given to books which have only their backs and corners encased in leather, the sides being covered with cloth, marbled or coloured paper, or parchment. There is little or no difference in the mode of covering from that already described. The leather to form the back should overlap each side an inch or an inch-and-a-half, according to the size and thickness of the volume. The corners should be neatly pared round prior to being placed in position; but the cloth or paper sides need not be glued or pasted on until the binding is nearly finished—either before the back is gilt or after—to avoid damage. It is necessary that both side-pieces should be put down at equal distances from the back, and neatly turned in at head, tail, and fore-edges.

CHAPTER XIII.—MUSLIN OR CLOTH BINDING AND BLOCKING.

Sometime between 1820 and 1841, at which latter date Mr. Archibald Leighton died, that gentleman conceived the idea that a cotton textile fabric might be turned to advantage for bookbinding purposes. His son, Mr. Robert Leighton, in 1883, contributed an article to *The Bookseller* in which he gave a description of the introduction to the trade of what his father had termed binder’s “muslin,” now known as “cloth.”

White calico was bought in London, sent to the dyers to be dyed, and from thence to Mr. John Southgate to be stiffened and calendered. “In my library,” said the son, “I have a volume presented to my father by the author. It is bound in smooth red cloth, with a paper label; the date on the label is 1822, and I believe it is one of a number similarly bound that year. To my father alone are we indebted for the introduction of this material, and the only person who assisted him in the invention was his friend David Smith, of the house of Bowman & May, Manchester warehousemen, of Wood Street, Cheapside.”

“The invention,” says Mr. Robert Leighton, addressing his readers, “is much older than you imagine. I cannot give the exact date of its introduction.”

* It is curious how the authenticity of discoveries, new applications, and inventions, are occasionally not exactly disputed, but confounded. In No. XXVI. of *The Bookbinder*, page 32, will be found a reference to “The First Bookbinders’ Cloth.” *The American Bookbinder*, according to that short article, states
Mr. Robert Leighton also claimed that his father was the first to suggest to the head of the firm of Messrs. De La Rue that the prepared cloth was capable of being embossed.

The idea having once taken root in the minds of master bookbinders, it was not long before numerous attempts were made to prove its practicability. A pattern or design for both sides and back was engraved on a gunmetal or brass cylinder, and transferred in reverse upon one made of compressed paper, strung upon an iron spindle, and turned in the lathe to the exact circumference of the metal one. These two being worked together in a machine—like a die and its counterpart—the cloth was passed between them and was accordingly embossed.

Mr. R. Leighton, in speaking of a machine, did not designate its name; he merely said its "cylinders were only fourteen inches or fifteen inches wide, it was turned by manual labour, and heated by red-hot irons which were placed in the cylinder, and replaced by others when cold."

However, thanks to Mr. Robert Leighton, the trade has a knowledge of the approximate date of introduction of the now almost universal practice of binding in cloth. He says that "the first man who really manufactured bookbinders' cloth was Mr. Thomas Hughes, of Bunhill Row, and that that gentleman brought the article to such perfection, that his firm desisted from dyeing and calendering, and bought the goods in a finished state from Mr. Hughes." Mr. Leighton also states that "the first person to undertake the embossing of bookbinders' cloth on cylinders a yard wide was Mr. Law, of Monkwell Street."

This indefinitely-described cylinder embossing machine was soon superseded. Mr. R. W. Cope, of Finsbury, is claimed, invented the well-known Arming Press, which has been a universal favourite up till recently. Further improvements followed, and the accompanying illustration shows the latest Arming Press on the market. The Self-Inking Arming Press will print, as well as emboss, either in black or coloured inks. The table works to and fro on the ribs, and the block is twice rolled for each impression. The pressure is obtained by a movable wedge above the heater-box, and the heat generated from gas. An apparatus for cooling the heater-box by a supply of water is added, thus saving the machine from remaining idle until the box is cool, and accelerating speed. Of course, blind blocking can be done with still greater facilities.

About twenty years later, when cloth bindings almost entirely superseded other kinds, a large manufactory was established by James Leonard Wilson, of Hoxton. That gentleman so improved the manufacture that he outrivalled all competitors in this country or abroad, and his business increased in consequence. Of course further improvements have followed, and now cloths of all colours, tints, and shades are to be obtained, watered, grained, or with satin-like faces, and as a consequence cloth bindings predominate.

"The exact period when gold stamping was first applied to bookbinders' cloth is clearly that "as late as 1836 there was no manufactory of bookbinders' cloth in London, although the material had already been in use as a covering for books for some years—at least ten." When Mr. Robert Leighton wrote to The Bookseller in 1883, he ascribed the application of calendered and stiffened muslin for book-covers to his father, Mr. Archibald Leighton. That gentleman died in 1841. Surely The American Bookbinder does not imply that cloth binding was first executed in the United States. It was probably 1851 before a bookbinders' cloth factory was established in London; prior to that date, binders, as shown, bought their own calico, sent it to their own dyers and calenderers, and used it as required. When the innovating covering became popular, then a special factory was set up. Can The American Bookbinder name any United States firm who applied cloth for covering prior to Mr. Archibald Leighton's adoption of it?"
marked by the publication of Lord Byron's Life and Works, in seventeen volumes. The volumes were published monthly, and had a sale of about twenty thousand. They were bound in green cloth, and the first volume was issued in 1832, with a green paper label on the back, matching the cloth in colour, on which was printed in bronze the title and a coronet; on the second and succeeding volumes the paper label was dispensed with, and the coronet and the title were stamped in gold upon the cloth itself."

This short review of the history of cloth binding has been put before the reader in order that he may judge of the rapid strides which science and art, combined with engineering skill, have made towards its present excellence of production. There are now machines of various descriptions for embossing cloth covers, light or heavy, dwarf-like or gigantic structures capable of doing any amount of work in an incredibly short space of time.

These machines are made in various sizes from fifteen inches by nine inches to twenty-six and a half inches by sixteen and a half inches, and are in general use amongst large cloth binders. A smaller but still exceedingly useful blocking and inking press is supplied by Messrs. Kampe & Co., of Holborn. It is worked by hand-power, and if with riding and sliding-table, as in illustration, the ribs can be removed and the press worked at will as an ordinary Arming Press; it commands the attention of binders generally as being a useful adjunct where shorter numbers or smaller covers are to be treated. This class of machines has nearly eclipsed the old and once much-prized Arming Press. Illustrations of Messrs. Kampe & Co.'s "Rock" gold-blocking and inking press will be seen on the back of the cover of THE BOOKBINDER.

(To be continued.)