

Schools, by W. London. A bad time immediately followed. The Restoration also restored the office of Licensor of the Press, which continued till 1694.

In the first Copyright Act (8 Anne, c. 19), which specially relates to booksellers, it is enacted that, if any person shall think the published price of a book unreasonably high, he may thereupon make complaint to the archbishop of Canterbury, and to certain other persons named, who shall thereupon examine into his complaint, and if well founded reduce the price; and any bookseller charging more than the price so fixed shall be fined £5 for every copy sold. Apparently this enactment remained a dead letter.

The modern bookselling trade divides itself into the several branches of publishing and wholesale bookselling, and the retail, the old or second-hand, and the periodical trades. Publishing is confined to a few of the larger cities, London naturally taking the lead, followed by Edinburgh, Glasgow, Oxford, Manchester, Liverpool, Cambridge, Dublin, and a few other places; while purely wholesale dealers are to be found in the large towns only. In Great Britain, and especially in Scotland, booksellers are located in every small town; but in Ireland there are very few, except in the chief cities. Formerly the retail booksellers were expected to demand the full retail price of a book, and make no greater reduction than discount for ready money; but this restriction has been discontinued as contrary to the spirit of free trade. The trade in old or (they are sometimes called) second-hand books is in a sense a higher class of business, requiring a knowledge of bibliography, while the transactions are with individual books rather than with numbers of copies. Occasionally dealers in this class of books replenish their stocks by purchasing remainders of books, which, having ceased from one cause or another to sell with the publisher, they offer to the public as bargains. The periodical trade is entirely the growth of the present century, and was in its infancy when the *Penny Magazine*, *Chambers's Journal*, and similar publications first appeared. The growth of this important part of the business has been greatly promoted by the abolition of the newspaper stamp and of the duty upon paper, the introduction of attractive illustrations, and the facilities offered for purchasing books by instalments.

The history of bookselling in the New World has yet to be written. The Spanish settlements in America drew away from the old country much of its enterprise and best talent, and the presses of Mexico and other cities teemed with publications mostly of a religious character, but many others, especially linguistic and historical, were also published. Bookselling in the United States was of a somewhat later growth, although printing was introduced into New York as early as 1673, Boston in 1674, and Philadelphia in 1683. Franklin had served to make the trade illustrious, yet few persons were engaged in it at the commencement of the present century. Books chiefly for scholars and libraries were imported from Europe; but after the second war printing-presses multiplied rapidly, and with the spread of newspapers and education there also arose a demand for books, and publishers set to work to secure the advantages offered by the wide field of English literature, the whole of which they had the liberty of reaping free of all cost beyond that of production. The works of Scott, Byron, Moore, Southey, Wordsworth, and indeed of every author of note, were reprinted without the smallest payment to author or proprietor. Half the names of the authors in the so called "American" catalogue of books printed between 1820 and 1852 are British. By this means the works of the best authors have been brought to the doors of all classes in the cheapest variety of forms. In consequence of the war with the Southern States, the

high price of labour, and the restrictive duties laid on in order to protect native industry, coupled with the frequent intercourse between the two countries, a great change has taken place during the last few years. Books printed and bound in Britain are greatly appreciated, and American publishers, in the absence of an international copyright, make liberal offers for early sheets of new publications. Boston, New York, and Philadelphia still retain their old supremacy as bookselling centres.

In Australia the sale of books is not large at present; there are, however, indications of a great increase. The booksellers there as in Canada, although supposed to be bound by the copyright law restricting the sale of any but genuine editions, avail themselves of American and other reprints, in which the authors have little or no interest.

In the course of the 16th and 17th centuries the Low Countries for a time became the chief centre of the bookselling world, and many of the finest folios and quartos in our libraries bear the names of Jansen, Blauw, or Plantin, with the imprint of Amsterdam, Utrecht, Leyden, or Antwerp, while the Elzevirs besides other works produced their charming little pocket classics. The southern towns of Douai and St Omer at the same time furnished polemical works in English.

Germany, the birthplace of the art of printing, is still the first bookselling country in the world. There, distributed over 786 towns, are 3473 publishers and booksellers, Leipsic being the centre to which they all look, all of any consequence having an agency there, where their books are collected, and their own publications distributed. In Leipsic there are 105 commission-agents for 4202 booksellers, of whom 1143 carry on business in Austria, France, Russia, Holland, America, and England. The book exchange has 115 members who transact business there. The other centres of the German book trade are Stuttgart, with 16 agents for 542 booksellers; Vienna, with 31 agents for 475; Berlin, with 29 agents for 305; and Prague, with 18 agents for 98. The great book fair at Leipsic is held every year immediately after Easter, and is attended by booksellers from every part of the world.

In France the press is still shackled, and every book and pamphlet must be registered before publication; but notwithstanding this booksellers flourish, especially in all the large towns, and some of the finest illustrated works of the day are issued from the French press. In Italy booksellers are few, and in Spain they can hardly be said to have any existence at all.

From the *English Catalogue of Books for 1874* it appears that there were about 4500 books published in Great Britain and Ireland during that year. This number includes new editions of works previously issued, as well as the principal books published in the United States.

The values of books exported and imported during 1874 are given in the official returns as follows:—

Exports.		Imports.	
To United States.....	£274,373	From France.....	£57,680
„ Australia.....	267,658	„ Germany.....	36,494
„ British India and		„ Holland.....	31,837
Ceylon.....	83,259	„ United States.....	17,807
„ British N. America..	69,127	„ Belgium.....	16,254
„ France.....	41,622	„ Spain.....	4,177
„ South Africa.....	35,986	„ Italy.....	1,323
„ Holland.....	21,912	„ O countries... ..	13,359
„ Germany.....	19,894		
„ Belgium.....	16,953		
„ British West Indies			
and Guana.....	14,469		
„ Other countries	59,539		
Total.....	£904,792	Total.....	£178,956

Much interesting information on the book trade will be found in Charles Knight's *Biography of William Caxton*.

and in the same author's *Shadows of the Old Booksellers*, 1865. See also *History of Booksellers*, by Henry Curwen, 1873, and *Bilder-Hefte zur Geschichte des Bücherhandels*, by Heinrich Lempertz, Cologne, 1854.

BOOKBINDING is the art of fastening together the sheets of paper composing a book, and enclosing them in cases of pasteboard covered with leather, cloth, or other materials,—the object being the preservation of the book, and its protection from injury while in use.

At the time when books were rarities, being either manuscripts produced by patient secluded labour or the productions of the printing-press during the infancy of typography, they were naturally very highly prized; and as much labour and expense were bestowed upon the protection and embellishment of a cherished folio as would suffice at the present day for the building of a house. The wooden cover of a book, with its metal hinges, bosses, guards, and clasps, seems, in all but dimensions, fit for a church door; but the great improvement in all the mechanical arts, together with the extension of education to all classes, and the consequent diffusion of knowledge, has led to the multiplication of books, and the gradual but radical changes witnessed during the present century in the art of bookbinding.

For a period of one thousand years—from the end of the 5th to the 15th century—books were excessively rare and costly, and comparatively few bindings illustrative of the art during the Dark Ages have been preserved to the present day. From being the task of slaves during the Roman empire, the transcribing of books came to be the duty of monks, who copied and bound the works which were among the chief treasures of religious establishments. Numerous documents exist indicating the attention which was given by all grades of the priestly order to the binding and preservation of their literary treasures. The general aspect of monastic bindings was thick, heavy, and solid, and according to modern ideas somewhat clumsy. Books for common use were enclosed in boards of hard wood covered with leather, with the binding protected by metallic bosses, corner plates, and clasps. The literary treasures, on the other hand, of kings and ecclesiastical dignitaries, and the sacred volumes of churches and monasteries, were encased in ivory sides, with appropriate subjects artistically carved on them, in silver and sometimes even gold plaques, or in the enamels of Limoges, &c.; and these bindings were frequently enriched besides with gems and jewels. Often these precious volumes were, in keeping with ancient customs, further preserved in boxes or cases no less rich and costly than the bindings they were meant to preserve. As the period of the Renaissance approached, silk and velvet came into use for ornamental bindings.

The most ancient binding in the British Museum is the St Cuthbert gospels and manuscript, written about the beginning of the 8th century, bound in velvet intermixed with silver, with a broad silver border, enriched with inlaid gems. One of the most ancient and remarkable of bindings, a *Lectionarium*, which was formerly in the collection of M. Libri, that eminent bibliophile thus describes in his *Monuments inédits*: "Manuscript upon vellum of the 11th or 12th century in an ornamented cover (forming a diptych), both sides being gilt and silvered metal, with ivory carvings, figures in *alto rilievo*, and enamels *en taille d'épargne*. The borders contain thirty-two large ivory medallions (sixteen on each side), representing the old prophets and saints, with their symbols, and having inscriptions in ancient uncial letters, the whole surrounded with a foliage of ivory work in the Greek style, and with baguettes carved in compartments. The ivory medallions are very early, probably as old as the 6th century, whilst the enamels and metal ornamentation are specimens of the

handiwork of a rather later period. . . . This *Lectionarium* has evidently been inserted in the present cover at a later period, the original one having most probably been damaged or destroyed by use." Referring to this work, M. Libri, in the introduction to the volume above quoted, says: "Whether the enamels contained in this binding are Byzantine and contemporary with the ivory sculptures, or were introduced later (as we have shown was frequently the case) into an older covering, the medallions and other workmanship in ivory, adorning the sides of this coating, appear, from the character of the heads, from the inscriptions, and from the workmanship itself, to date back to the earliest period of the Byzantine school."

With the invention of printing, and the consequent multiplication of books in a portable shape, came the modern style of bookbinding. The old massive boards, with their bosses, corner plates, and heavy clasps disappeared, and thin sides covered with leather, parchment, and vellum came into use. Bindings in which enamels, precious metals, or gems were employed almost entirely disappeared, and were followed by bindings in richly coloured leather or vellum, with elaborate designs, blind-tooled or worked in gold and colour, and gilt gaufré edges. By the wealthy and powerful families of Italy this style of binding and ornamentation was first encouraged towards the end of the 15th century, and skilful artists were employed to design appropriate decorations to be worked out by the bookbinders. Among the most famous early patrons of the bibliopie art in Italy were Michael and Thomas Maioli, the books of the latter being the models on which were fashioned the bindings of later collectors and of other countries. More rare and artistically valuable still are the works of another Italian collector of the 16th century, Demetrio Canevari, commonly called Mecenate, physician to Pope Urban. They are distinguished by a medallion executed in gold, silver, and colour, with the device of a charioteer driving towards Pegasus on an elevation, and the motto, ΟΡΘΟΣ ΚΑΙ ΜΗ ΛΟΞΙΟΣ. These elegantly gilt bindings have, in the opinion of M. Libri, never been surpassed.

Artistic bindings of Italy and Italian binders were brought to France by Charles VIII and Louis XII.; but it was not till the time of Francis I.—himself a lover of books and bindings—that Grolier, his military treasurer and the governor of Milan, brought the French school of binding suddenly to the front, and placed it, where it long remained, at the head of the art in Europe. The bindings executed for Grolier usually contain on their obverse the inscription, IO. GROLIERII ET AMICORUM, and on the reverse his usual motto was PORTIO MEA DOMINE SIT IN TERRA VIVENTIUM. Of Grolier's bindings the learned De Thou, a later and little less famous French bibliophile, remarked "that his books partook of the elegance and polish of their owner." The Grolier style is yet recognized as the most chaste, elegant, and appropriate method of book ornamentation, and it immediately attained an enormous reputation in France. "The very tools used by his binders," remarks M. Libri, "were employed for contemporary collectors, and his admirable patterns have been imitated and copied by other French bibliophiles. The gradual change in those patterns is very perceptible. At first they were formed by a simple and chaste combination of various links only; but afterwards Grolier successively introduced into the designs more rich ornaments, such as small flowers, wreaths, &c." Some of his later covers were resplendent with gold and coloured ornament, most elaborately tooled.

After the period of Grolier the taste for magnificent bindings in France grew into a passion, and the sumptuous bindings in which the famous Diana of Poitiers indulged

are almost without parallel. The designs for many of her bindings are said to have been prepared by order of her royal lover Henry II., under the superintendence of the celebrated artist Le Petit Bernard. Her books are marked with her favourite symbols, the lunar crescent and the bow, and the monogram D T, sometimes (probably in the case of love-gifts) with the H of Henry interlaced, and surmounted by the crown. It would be a useless and almost endless task to name the patrons of artistic bindings up to near the period of the revolutionary outbreak, during which long time French binders stood at the head of their craft. Such outstanding names among many bibliophiles as those of the historian De Thou (Jacobus Augustus Thuanus) and Colbert, the minister of Louis XIV., cannot be passed over. Such was Colbert's care for artistic bookbinding that, in a treaty with Marocco, he inserted a stipulation for a certain number of skins annually to be used for bindings in the *Bibliothèque Royale*. Much less is known concerning the bookbinders themselves than of their patrons and the works they executed; but prominent among the bibliopiege artists of all times stand the chief French *relieurs* of the 17th and 18th centuries—Le Gascon, Abbé Dusseuil, Padeloup, and Deroma. Bindings by these artists are among the esteemed prizes of modern collectors.

Although during the 16th and 17th centuries bindings were produced in England which suffer no disgrace by comparison with contemporary masterpieces of French, Italian, and German bibliopiege, it was not till well into the 18th century that England took the leading place in the workmanlike forwarding and artistic finishing of books. Silk and velvet long remained the favourite coverings for the more costly bound books in the royal library, and down to the time of James I. we find very elaborately worked bindings in these substances. But, at the same time, there are not wanting magnificent examples of work in calf, morocco, and vellum, with blind and gold toolings, and gilt gaufré edges. The bindings of John Reynes, a bookbinder to Henry VIII., had embossed on them the curious heraldic conceit of a shield, supported by a pair of unicorns, charged with the emblems of the passion, and along with his monogram the inscription *Redemptoris mundi arma*. Before James VI. of Scotland came as James I. to the English throne, he was, as became his literary character, a collector of books and a lover of bindings. John Gibson of Edinburgh held, under James, the office of royal binder, with an annual salary of £20 Scots. A detailed list of bindings, with the prices charged by Gibson, is printed by the Bannatyne Club in *The Library of Mary Queen of Scots and James VI.* Mr J. T. Gibson-Craig of Edinburgh has in his excellent collection an original Scotch binding from the library of Queen Mary, the *Cronique de Savoye*, a small folio in brown calf, richly tooled in silver, with the Scottish arms, and the initial M. The same collector also possesses a Scotch binding in brown calf, with blind and gold panelling, gilt and gaufré edges, with the name and arms of the Earl of Bothwell, the third husband of Queen Mary. De Quincey, in a paper on "Secret Societies," ranks a Bible bound by Mr Farrer in 1635 above the *chefs d'œuvre* of British and Continental artists.

The acknowledged supremacy attained by English bookbinding in the latter half of last century is due in large measure to the work of Roger Payne, a man gifted with extraordinary skill, dexterity, and taste, but unfortunately also of the most erratic and dissolute habits. Payne's work was, as he himself expressed it, "very carefully and honestly done;" his tooling especially was very beautiful, and his ornaments, many of which he fashioned with his own hands, were at once highly appropriate and artistic.

In his bills he was in the habit of taking his patrons into his confidence in an unusual manner, and one of these may be worth copying.

"*Aeschylus Glasguae MDCCXCIV Flaxman illustravit.* Bound in the very best manner, sew'd with strong Silk, every Sheet round every Band, not false bands: the Back lined with Russia Leather, Cut Exceeding large; Finished in the most magnificent manner. Embordered with ERMINE expressive of The High Rank of the Noble Patroness of The Designs, The other Parts Finished in the most Elegant Taste with small Tool Gold Borders Studded with Gold; and small Tool Panes of the most exact Work. Measured with the Compasses. It takes a great deal of Time making out the different measurements, preparing the Tools, and making out new Patterns. The Back Finished in Compartments with parts of Gold studded work and open Work to relieve the Rich close studded work. All the Tools except studded points are obliged to be worked off plain first, and afterwards the Gold laid on and Worked off again. And this Gold Work requires double Gold being on Rough Grained Morocco. The impressions of the Tools must be fitted and cover'd at the bottom with Gold to prevent flaws and cracks.

Payne, in poverty and distress, came prematurely to a drunkard's grave in 1797. His style of binding has still many admirers, and the Roger Payne style is one of the established methods of finishing in bookbinders' establishments at the present day. After Payne, Charles Lewis was the next famous English binder flourishing in London in the early part of the present century, and his bindings come down to and connect with the work of bibliopiege artists who still exercise their calling.

The operations of bookbinding are now carried on upon a scale which could not have been dreamt of even at the beginning of the present century, and the millions of volumes which annually issue from the press could not possibly be put into the hands of the reading public in the form and at the price at which they are sold without the aid of machinery. In Great Britain nearly all books are first issued in cloth cases, and while the greatest variety of grain and colouring has been reached in the preparation of the cloth for such cases, their gilding, embossing, and lettering, all accomplished by machinery, leave almost no improvement to be desired, and the most handsome and fairly durable bindings can thus be supplied at an incredibly small cost. At the same time, it is practicable to prepare, emboss, and gild cheap leather covers by the same processes and machinery adopted for cloth cases, and the bindings of cheap family and pocket Bibles are thus produced. But although the old solid and substantial handiwork of the craft is thus fairly eclipsed, there is still employment—and more employment than ever—for binders in leather, who chiefly rely on manual dexterity for the forwarding of their work, and individual taste and skill for its artistic finishing.

Modern bookbinding thus divides itself into two principal branches—1st, Leather work, and all kinds in which manual labour and skill are chiefly employed; and 2d, Cloth-casing, or such work as is largely executed by the aid of machinery.

It may be convenient first to notice the various operations through which a book passes in ordinary or leather binding. These operations are grouped under two main divisions—"forwarding" and "finishing." Under the first is comprehended everything necessary to the preservation of a book; the second concerns merely the embellishment.

Forwarding.—In the first place, the sheets of a book are folded in such a manner that the pages follow each other in consecutive order. In this operation the binder is guided by the "signatures," which indicate the part of a sheet to be superimposed upon another. This labour is performed by women and girls, who acquire incredible dexterity by continued practice. The sheets, after being folded, are loose and bulky. The next operation has for its object the bringing them into a more compact form, which was formerly accomplished by beating them with a broad-faced hammer upon a smooth flat stone. The condensing or compacting is now generally accomplished by passing the sheets between the cylinders of a rolling-machine. A quantity of sheets, called a "section," is gathered and arranged between two pieces of tin plate and passed through

between the powerful cast-iron rollers of the machine. After rolling, the sections composing a volume, supposing it to have been necessary to press it in more than one division, are brought together and carefully collated. The whole of the sheets to compose the volume being found in their proper place and order, they are taken in sections to the standing-press, in which a number of them are piled up between boards. The form of standing-press generally used is what is termed the Atholl or Isle of Man press, on account of the three arms, or rather legs, by which the compound screw of the press is worked.

The volumes are then adjusted and clamped up in the laying or cutting-press for the operation of *sawing the back*. Two or three grooves are, in this operation, sawn straight across the back of the volume, according to the number of bands on which the book is to be sewed. In these grooves the bands are lodged, so that when the sewing of the book is complete, the bands are "flush" with the rest of the back, instead of projecting out as they did in old times. A slight cut is made near each end for holding the "kettle stitch," or stitch by which the sewer fastens her thread each time she passes up and down. The sewing is done at an apparatus called the sewing-press or frame, upon which the number of cords to be employed are fastened at proper distances, in accordance with the saw-marks in the back of the volume. The method of sewing varies according as the sewer is working one or two "sheets on," and the number of bands employed may be from two to six, according to the size of sheet, weight of the book, &c. When taken out of the sewing-frame the fly-leaves are pasted on, and the volume being neatly squared, the back is covered with a coating of thin glue; it is then laid on a board and allowed gradually to dry. When the glue is quite dry the back is rounded by beating with a hammer, and subsequently the volume is placed between two feather-edged boards, above which the back slightly projects. These are then placed together in a lying-press, for the *backing* process, that is, the back of the book is well beaten until it projects a little over each side of the bevelled board, so as to form a groove or place for the millboard covers to lie in. The book is now ready for the *boarding*. The boards were formerly, as the name indicates, really of wood, but now of millboard of various thicknesses, according to the size of the book. They are cut a little larger than the book itself, and are attached by the ends of the bands, left for that purpose, being passed through holes in the sides of the boards. The ends of the slips or bands are then frayed out, pasted down, and hammered flat and smooth. The volume is next placed between pressing boards, and put with others into the standing-press, where it is submitted to a powerful pressure for several hours. Thereafter it is again fastened into a lying-press for cutting or *ploughing* the edges with a knife-edged instrument called the plough. The object of the binder in this operation is to make every page of uniform size, presenting a smooth and equal "head," "tail," and "fore-edge." The binder is careful to leave as broad a margin as practicable; but the size of the smallest sheet is the real gauge of the whole book. The head is first cut, next the tail, and before the face is cut it is necessary to have the back flattened by passing "trindles" through between the cords and the boards. After the face has been ploughed the back springs back into its rounded form, and thus the face presents the appearance of having been cut in the round.

The book is now ready to have its edges either *sprinkled, coloured, marbled, or gilt*. *Sprinkling* is accomplished by merely mixing the colour or colours with paste or size, and throwing the mixture from a brush violently on the edges. The uniform *colouring* of the edges is done by screwing the volume up in the lying-press and applying the colour with a sponge. *Marbling* is usually carried on as a separate trade, and requires considerable adroitness. The colours to be used are thrown into a square shallow trough containing prepared gum water, and as they float on the top they are dexterously mixed and combed through each other so as to produce the kind of marble pattern desired. In this the edges to be marbled are dipped, and when they are withdrawn it is found that the marbled colours have adhered to them. In the *gilding* the fore-edge or face is first operated on; and to level it the back must again be flattened, as in ploughing. The book is then firmly fixed in the lying-press, and the edges are scraped and smoothed with a steel scraper. The edges are next coloured, the gold size, consisting of white of egg mixed with water, called *glair*, is laid on with a camel's-hair brush, and immediately covered with gold leaf. When dry, it is burnished by rubbing with an agate burnisher, and the head and tail are put through the same processes. Gilt edges in early bound books were usually *gaufré, i.e.*, had designs impressed on them; but scarcely any such work is now done.

The head-bands, which are next attached to the back head and tail, are ornamental appendages, which partly conceal the folded-in edges of the leather, and give a finished aspect to the book. They consist of strips of vellum or parchment worked over with coloured silk or cotton, and are partly glued to the backs and partly fastened by threads passing through the kettle stitches. The back is then lined with strong paper glued on it, two or three thicknesses being used according to the weight of the book. Nearly all books are

now bound with open or elastic backs, that is, with the leather of the cover not attached to the back of the sheets. The elastic back is composed of a strip of thin cardboard as long as the volume and a little broader than the back, so that it covers the whole back, and is glued in the joint at the edge of the millboards. Across this elastic back false bands are glued to imitate the projections produced by the cords of ancient bindings; and when these are dry, the book is ready for covering.

The materials used for *covering* are very various; but for the greater part of modern books calf-skin dyed of various colours is employed; while kid-skin, and its imitation in sheep-skin or roan, and sheep-skin acknowledged as such, in which school-books and many law-books are bound, are also used in great quantities. The piece of leather, cut to a proper size, is moistened with water, next covered on the inner side with paste or glue, and then applied evenly to the millboard sides. The superfluous edge of the leather, first pared to reduce its thickness, is turned over on the inside, and concealed from view by the end papers attached to the sheets forming the book, which are subsequently pasted down upon the millboards. As a last operation in forwarding, but one now frequently omitted, the book is "corded," that is, firmly tied between two boards until it is dry, so as to insure perfect smoothness in the cover. A book is *half-bound* when only the back and corners are protected with leather, the rest of the boards being covered with prepared paper or cloth.

Finishing.—Finishing processes are so varied and numerous, according to the material under treatment and the effect to be produced, that a lengthy treatise would be required to detail the operations. It will suffice here to notice the operations in finishing an ordinary white-calf binding. The whole of the leather is first washed over with a thin paste of the consistency of cream and allowed to dry. The colouring is then done by brushing over it a solution of "salts of tartar" (tartrate of potash), which produces the brown tint of ordinary bindings. If the sides are to be further ornamented, as, for example, by forming "tree-calf," they are washed over with *glair* (white of egg). Each board when dry is separately bent convex, and water is sprinkled on till it runs downwards from the central ridge in a great number of separate branching runlets. As the water is so running, a solution of copperas is sprinkled on and carried along and out by every tricklet, and thus the dark-coloured branched markings are produced. The appearance of "French calf" is produced by dabbing copperas from a sponge on the brown covers. The back is next *pieced for title*, by pasting a piece of coloured morocco into the space between the first and second bands. The points at which lines either blind or in gold are to cross the back are then marked, the whole back is washed with thin paste, and two coatings of *glair* are applied to it. When dry the gold leaf is laid on, the lines and ornaments are tooled, and the title lettered with tools and letters which have been heated at a gas stove. The superfluous gold is cleaned off, and after polishing the whole with a hot iron tool the back is finished. The same processes are followed with the sides and the "squares" when any ornamentation is tooled upon them. In the case of finishing of a high class, in morocco, &c., the ornaments are first tooled blind, *glair* is pencilled into the lines, and allowed to dry, and gold leaf is then laid on and tooled in. A book is said to be bound *extra* when well forwarded, lined with superior paper, and gilt round the sides and inside the squares.

Casing.—Previous to the year 1825, new books were generally issued in *boards*, that is, in millboards covered with drab paper, upon which the title, printed on a white label, was pasted. Although this was greatly superior to the Continental mode of covering new books with thin paper, something more elegant and durable was needed, and Mr Archibald Leighton of London endeavoured to meet this want by introducing coloured cloth (glazed calico). One of the first books of importance bound in this material was the edition of Lord Byron's works in seventeen volumes. The covering of books in cloth cases can be done profitably only in a factory where there is much division of labour and many labour-saving machines. In cloth binding the preparation and ornamentation of the cases are throughout distinct from the preparation of the sheets, and it is only in the very last stage that the volume and its case are brought together. The first process in the preparation of the cloth cases is cutting the millboard. This is now effected by a rotary cutting-machine or "ripper," an invention introduced from America, whence indeed comes most of the machinery used in this species of binding. The machine consists essentially of a pair of strong spindles placed above each other, on which are mounted circular scissor-edged discs, which cut in pairs like the blades of a pair of scissors. The cutting discs can be arranged on the spindles to cut any desired size of board, and the gauge-frame on the feeding table pushes the pieces of millboard into the machine by a motion communicated by a cam-wheel. Such a machine will cut 50,000 pairs of boards in the working hours of a week. When the boards are to be bevelled this is done in a kind of planing-machine. The cloth for the covers being cut to the required size and covered with glue, a pair of boards are laid on with the help of a brass gauge,

which keeps them parallel, and regulates the width of the space to be left for the back. A strip of paper is pasted into the back, the edges of the cloth are laid in, and the boards are passed between a pair of india-rubber rollers, by the pressure of which any air-spaces between the cloth and the millboards are squeezed out. They are then hung up to dry previous to receiving title and ornamentation. The ornamentation on book cases consists of embossing or blind tooling, black or colour printing, and gilding; and the machines in which the work is done are the same in principle. They are powerful presses, worked either by long lever handles or by power with heavy fly-wheels. Blind patterns, or gilded work and tiling, are done at one operation, the dies containing the pattern being heated either with steam or gas. In the case of ornaments to be printed in ink, the pattern is first blocked in the blind with a heated die, and subsequently ink-printed in the same press with the die cold.

The gathering, collating, and stitching of the sheets differ in no way from the same processes already described for leather work. Machinery has been adapted for folding, but, for the working of folding-machines, guide points require to be printed on the sheets, as books must be folded by the type and not by the edge of the sheet. A machine of American origin, besides folding 8vo sheets, will cut, fold, and insert the half sheet of a 12mo. This machine, attended by a single girl, is sufficient to fold from 1200 to 1500 sheets in an hour. The folded sheets are sometimes condensed in another American machine called "The Smasher," which is similar in its action to the embossing press. After stitching, books which are to be cased up with uncut edges have their face and tail cut square by means of a trimming-machine. The principle of this machine consists in a revolving circular knife driven with a treadle or handle; a table (containing the gauge, press bar, and rest), upon which the books are placed, glides across the axis of the knife, and the parts requiring cutting off, coming in contact with the revolving knife, are cut away. When the edges are to be gilt they are cut in some of the numerous forms of guillotine cutting-machines. The commonest form of guillotine is a heavy knife fixed in a strong framework, and having a diagonal motion in its descent by which it cuts with a kind of shearing action. In another machine the knife acts with a punching motion, and cuts the three edges in one descent; and there is in use a most ingenious American machine, with a revolving table, in which each edge of the book is in succession drawn in a slanting direction up against a fixed cutter. The edges are gilt as in ordinary binding, but instead of each volume being operated on singly, a number are placed evenly in a lying press and gilt simultaneously.

After trimming or gilding, as the case may be, the backs are glued up, and when dry they are rounded, generally with the hammer. Several machines have been devised to perform this operation, and one patented in 1865 by Messrs Cope and Bradbrook has come into extensive use. In this machine the book is clamped up between a pair of horizontal cheeks on a table which moves backwards and forwards under a heavy roller adjusted in a frame over the table. The pressure of the roller against the back gives the required "round," which can be varied by raising or lowering the pitch of the roller. From the rounding process the volume goes to the backing-machine, by which the joint or groove along the back in which the boards lie is formed. The backing-machine is worked by the hand, and its action is somewhat similar to that of the rounding-machine. The book is seized between a pair of jaws, which only leave about a quarter of an inch projecting above them. The workman brings down a roller on this projecting part of the volume, and its pressure forces the free portion of end sheets over the sides of the jaws, thus forming the joint to receive the boards. With the backing the part of the work done by machinery ends. The backs are next coated with glue, pieces of calico for pasting down are laid on, and the entire back is covered with paper. When dry, the volume is fitted into its cases and "pasted up," and the operations are finished by piling the cased books in a hydraulic press between boards, so as to leave only the backs projecting.

A kind of binding in which the process of sewing is dispensed with, and the backs coated with a rapidly-drying solution of india-rubber, was patented by Mr William Hancock in 1836, and is still used to some extent. The sheets in this binding must either be cut into single leaves or folded as folios, as they all require to be agglutinated by repeated coatings of the india-rubber solution. The india-rubber backing is convenient for volumes of plates, music books, and any volumes made up of large separate sheets.

Although cloth casing is found sufficient for the greater proportion of the literature which now circulates so extensively, books of reference and works in public libraries require the more secure and workmanlike binding accomplished by hand. At the same time, while ornaments stamped from dies may be very pretty and effective, they have no claim to rank as works of art, and for the collections of bibliophiles the hand-tooling of bibliopagic artists is in as great demand and as handsomely remunerated as was the art of the most accomplished binders of the 18th century. (J. P. A.)

BOOK-KEEPING.—The object of book-keeping is to exhibit a distinct and correct state of one's affairs, and to enable companies, firms, and individuals in trade, or otherwise occupied, to ascertain at any time the nature and extent of their business, the amount of their profits or available income, or, as the case may be, the extent of their losses. |

To those engaged in trade or commercial pursuits book-keeping is absolutely necessary, as by it all transactions should be regulated, and their results exhibited. The more simple the system the better; but care must be taken that the plan adopted is sufficiently comprehensive and explanatory, to satisfy not only the person keeping the books, but those who may have occasion to refer to them; for, however satisfactory it may be to a trader to follow a system which is intelligible to himself alone, circumstances might arise to render the inspection of others necessary, and from their inability to follow out transactions in the books, suspicions would probably be engendered for which there was no real foundation. Hence the necessity for the adoption of certain recognized and approved systems, which, being plain and easily understood, must prove satisfactory to all concerned.

Book-keeping, when conducted upon sound principles, is invaluable; it not only shows the general result of a commercial career, but admits of analysis, by which the success or failure, the value or utter worthlessness of its component parts, or each particular transaction, can be easily ascertained. In a word, on the one hand it promotes order, regularity fair dealing, and honourable enterprise; on the other, it defeats dishonesty, and preserves the integrity of man when dealing with his fellows. |

It would be difficult, and perhaps of little importance, to trace the origin of book-keeping. It was certainly known to the ancients (see Pliny, lib. ii. cap. 7); and Cicero seems to have had bill transactions between Rome and Athens when he arranged for his son's education without the necessity of having to remit money (see *Eps. ad Att.* xii. 24; xv. 25), which infers some kind of book-keeping. Kelly, however, who wrote on the subject in 1805, asserts, and it is not disputed, that a friar, named Lucas di Borgo, whose work on algebra was the first to appear in print, was the first to write a treatise upon book-keeping, and this was published at Venice in 1495. |

This work was followed by many others, possessing considerable merit, but so complex as to make them useless. After a time the mercantile community became alive to the fact that a practical system would be preferable to the theoretical suggestions of writers who were utterly ignorant of commercial matters; and men, more or less connected with trade, began to write on the subject. The incubus of prolixity, however, still clung to them, conciseness of style seeming an impossibility, and the great fundamental principles of the art were so smothered by rules and explanations—the volumes sometimes containing 500 or 600 pages—that the difficulty was how to apply them; hence the need of still greater simplicity and improvement.

In 1796 Mr E. T. Jones of Bristol devised a plan "for keeping books correctly," breaking the ice with a treatise which is still held in very high estimation. After that a great improvement is visible in the writings of authors on this important subject, as in those of Benjamin Booth (1789), Hamilton (1820), Jones (2d treatise, 1821, 3d treatise, 1831), C. Morrison (1823), W. and R. Chambers, Edinburgh,—the most of them, those of Jones excepted, being elementary works, more particularly adapted to schools, and illustrating the principles of the science by the example of one set of books adapted to foreign trade. In F. H. Carter's *Practical Book-keeping, adapted to Commercial and Judicial Accounting* (3d ed. 1875), which gives a great variety of forms and sets of books, the recognized

systems of book-keeping are practically applied, so as to enable any one, without difficulty, to acquire a thorough knowledge of the science.

The questions to which a satisfactory system of book-keeping gives the trader ready and conclusive answers are such as relate—1. To the extent to which his capital and credit will entitle him to transact business; 2. To the assurance he has that all his obligations are honestly fulfilled; 3. To the ascertainment of the success or failure of his commercial dealings, and the position of his affairs from time to time.

There are three recognized systems of book-keeping, namely, by "single entry," "double entry," and the "mixed method."

I. SINGLE ENTRY.—This system is denoted by its name, transactions being posted singly, or only once, in the ledger. Three books are generally kept—the cash book, day book, and ledger, although the first-named is not essential, the cash entries being passed through the day book. Its only use is to check the balance of cash in hand. In the day book are entered daily all the purchases and sales, whether for cash or credit; and all the credit

entries are then transferred to accounts opened in the ledger, that is, all goods sold on credit are charged against the customers, and what are purchased are carried to the credit of parties supplying them. In the same way, when cash is received from a customer for goods sold on credit, it is posted to his account, and the reverse entry is made when a trader pays for the goods he has bought. Thus it will be seen that only personal accounts are entered in the ledger.

To frame a balance sheet, or state of affairs, on this system, the book-keeper brings down the balances due by customers to him, also his stock of goods as valued, and the cash he may have in hand, on the *left-hand side* of the sheet; whilst on the *right-hand side* he enters the balances still due by him for goods supplied, or money lent to him, and the capital, if any, with which he commenced business. The difference between the amounts of the two columns is either profit or loss; if profit, the merchant's capital is increased to that extent, and if loss, then he is so much the poorer.

The following skeleton balance sheet will give a better idea of the working and ultimate results of the system:—

Balance Sheet by Single Entry.

Assets.		£	s.	d.	Liabilities.		£	s.	d.
To Sundry Customers for Goods sold, per List.....		216	10	0	By sundry Tradesmen for Goods supplied, per List.....	184	7	8	
„ Goods in Stock, per Inventory and Valuation ..		314	9	6	„ Capital put into the Business.....	300	0	0	
„ Cash in hand		3	4	9					
		534	4	3		484	7	8	
					„ Profit on Business to date	49	16	7	
						534	4	3	

It will be observed that as the assets exceed the liabilities (including capital) by £49, 16s. 7d., that sum, being profit, must be added to capital; if, in the next or following years, any loss should emerge, as a matter of course such deficiency must be deducted from the trader's capital. The advantages of single entry are simplicity and easy adaptation to small retail trades, as the ledger contains only outstanding debts due to or by the trader. The disadvantage is in the difficulty of ascertaining the profits or losses on various goods, or on the several departments of a business.

II. DOUBLE ENTRY.—It is now universally admitted that this system is the best adapted for heavy, responsible, or speculative trades, for foreign trade especially, and for extensive mercantile concerns. As its name implies, it so far differs from the system already described, that every transaction must be recorded doubly in the ledger, that is

to say, accounts must be opened in that book, to which all entries in the subsidiary books, after being journalized, are twice carried, to the debit of one account and the credit of another. To illustrate this, let us assume that a merchant speculates in cotton, and purchases so many bales from John Bevan and Co. upon credit; he debits "Cotton account," and credits "John Bevan and Co." He does not pay for it in cash, but gives his bill at three months for the amount; John Bevan and Co. are debited with the bill, and "Bills Payable" are credited. He then sells the whole lot of cotton for cash to Cairns, Brown, and Co., debiting "Cash" and crediting "Cotton account." Lastly, he retires or pays the bill granted to John Bevan and Co., debits "Bills Payable," and credits "Cash." We will now put all these transactions into a "journal," posting therefrom to a "ledger," and so illustrate book-keeping by double entry.

Dates.	JOURNAL.	Dr.	Cr.
		£ s. d.	£ s. d.
1875.			
June 4	Cotton Account.....	2349	0 0
„	To John Bevan and Co., Charleston.....	..	2349 0 0
„	For Bales, @ „, ex "Mary Jane."		
June 6	John Bevan and Co.....	2349	0 0
„	To Bills Payable.....	..	2349 0 0
„	For our acceptance, No. 136, @ 3m/., due 6/9 Sept., at County Bank.		
June 17	Cash Account.....	3200	0 0
„	To Cotton Account.....	..	3200 0 0
„	For Bales, @ „, sold to Cairns, Brown, and Co., Manchester.		
Sept. 9	Bills Payable.....	2349	0 0
„	To Cash.....	..	2349 0 0
„	For Bill, No. 136, retired at County Bank.		
Sept. 30	Cotton Account.....	851	0 0
„	To Profit and Loss Account.....	..	851 0 0
„	For Profit on Cotton, ex "Mary Jane."		
		11,098	0 0
		11,098	0 0