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Specimens of ornamental art workmanship in gold, silver, iron, brass and bronze : from the twelfth to the nineteenth centuries : fifty large plates, in gold and colours of the choicest examples : with...

Wyatt, M. Digby (Matthew Digby), Sir, 1820-1877
London: Day & Son, 1852

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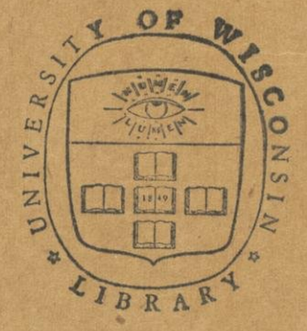

METAL WORK

AND ITS

ARTISTIC DESIGN

BY

MDIGBY WYATT

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Specimens

of

Ornamental Art Workmanship

in

Gold, Silver, Iron, Brass, and Bronze,

FROM THE TWELFTH TO THE NINETEENTH CENTURIES.

FIFTY LARGE PLATES, IN GOLD AND COLOURS, OF THE CHOICEST EXAMPLES,

With a History of the Art in Italy, England, France, Germany, and Spain;

TOGETHER WITH ITS THEORY AND PRACTICE.

BY

M. DIGBY WYATT, ARCHITECT,

AUTHOR OF "THE INDUSTRIAL ARTS OF THE NINETEENTH CENTURY," "SPECIMENS OF MOSAICS OF THE MIDDLE AGES,"
"A REPORT ON THE ELEVENTH FRENCH INDUSTRIAL EXPOSITION," ETC., ETC.

LONDON:

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TO

THE RIGHT HON. HENRY LABOUCHERE.

SIR,

THAT distinguished Ministerial position, which constituted you chief officer of the Government Schools of Design, and especially connected you with the progress of British manufactures and commerce, coupled with your personal accomplishments as a deep student and sincere lover of Art, assure me that you will regard with interest the present attempt to contribute to the advancement of one of the most important branches of national industry.

From the kindness it has been my privilege to experience at your hands, I feel confident that you will make full allowance for the many imperfections which it is but reasonable to anticipate in a work, the materials of which have been collected and wrought into their present form under the constant pressure of arduous and distracting engagements.

Fully relying on the interest of my subject, but mistrusting my ability to treat it worthily, I venture to dedicate the present volume to you,

And have the honour to be,

Sir,

Your obliged and most obedient Servant,

M. DIGBY WYATT.

77 Great Russell Street,
July 7, 1852.

PREFACE.

A PERUSAL of the admirable, though too brief, remarks upon the subject of metal-work contained in Mr. Pugin's "True Principles of Christian Architecture," first suggested to the Author of the present work how essential it was for the progress of the industrial arts that the unsatisfactory system of industrial design, which obtained universally in this country at the epoch of the publication of that work, should be greatly modified, if not entirely remodelled. In acknowledging the correctness of the undeniable proposition, that every material, insomuch as it differs in organic constitution, should vary correspondingly in the form and proportion into which it should be wrought, an admission was made, that the ordinary system of copying in metal forms proper for stone, and in stone forms proper for metal, wood, &c., was as contrary to the true canons of good taste, as it was subversive of any prospect of consistent originality. In order to succeed in any divination into the course most advantageous to pursue in the Future, it was first necessary to realise the successive steps by which various degrees of excellence had been attained in the Past. In entering on the threshold even of such a course of inquiry, the paucity of materials for the study of the art of design in metal-work presented itself. With the exception of Mr. Shaw's engravings, which comprise a series of objects, many of which exhibit most contradictory theories of composition; with the exception, of Mr. Pugin's own designs;—of a few scattered notices in the "Gentleman's Magazine," and the "Archæologia," and of two or three plates (of the Lynn Cup, William of Wykeham's crozier, &c.) in Carter's works, there may really be said to have existed no English authorities for reference on the subject. Social and religious troubles and political revolutions had contributed to destroy the majority of those treasures of gold, silver, and iron, which ancient records prove to have formerly abounded in this country; while a general ignorance

of their value, and apathy to their beauty or utility, combined to conceal the existence of the few which happy accident, rather than design, had preserved to modern times. It is only of recent years that the energies of Mr. Henry Shaw, Mr. Albert Way, Mr. C. J. Richardson, Mr. Delamotte, and of the various Archæological and other Societies, have succeeded in bringing to light many treasures of art which had long lurked in obscurity and unappreciated. From the plate-chests of the various City Companies and municipalities throughout the kingdom, from the recesses of old family chests and corner cupboards, and from the more jealous custody of College dignitaries, rich harvests have already been gathered in. Although through the labours of those to whom allusion has been made many interesting objects have been brought to light, figured, and described, the collection, could it but be brought together, would be found to consist of a series of objects precious to the antiquarian rather than to the artist, to the illustrator of obsolete customs and usages rather than to the student of the history and theory, or the practical designer, of metal-work. When, in the year 1844, the Author left this country with the object of extending his professional studies on the Continent, those investigations were yet but little advanced, and a few only of those illustrations had appeared which have since made the aspect of the primæval and mediæval vessels and objects manufactured in this country in gold and silver familiar to the eye. The apparent dearth of interesting materials from which any generalisation as to appropriate processes, forms, and ornament, might be extracted, served to stimulate the exertions of the Author. He was thus induced, during his residence abroad, to obtain access to, and to make drawings of, many objects, the peculiar types of which appeared valuable as suggestive of the principles which, combined, might be regarded as forming the grammar of metal-work, considered as a subsidiary branch of the Fine Arts.

During the course of these studies, some particulars were collected throwing light upon the practices of past ages and of those periods when the various styles of design and manipulation were at their highest point of perfection. On the Author's return to England, he found, that although during his absence from this country much had been done, there was still ample scope, and indeed great need, for some more copious illustration of the subject. He was hence induced to take counsel with many kind friends, interested both in antiquarian and in technical pursuits, and the result was, that he became intimately connected with the Archæological Institute and the Society of Arts. To both bodies he feels grateful for the kind encouragement he received in his labours,—to the former, for much sympathy and assistance in the

collection of materials,—to the latter, for the favour with which they received the papers on enamelling, and on other more or less dormant processes of the goldsmith's art, which he at various times contributed to their Proceedings. Thus encouraged, the Author determined to enlarge his stock of illustrations, and to arrange the information he had brought together into a form which might supply to others the knowledge it had cost him much labour to collect, and the conclusions at which he had arrived upon the subject.

In carrying out this object grave difficulties have presented themselves. Imperfect literary preparation, the necessity of preventing the study of one object from encroaching on that of others of at least equal importance, and continued occupation of an exciting and laborious kind, have all combined to render the task an arduous one, and the performance of it far from what it might have been in abler hands and under more favourable circumstances. In one particular, however, he feels himself to have been especially favoured. From many learned and artistic friends, by whom he was surrounded, he received the kindliest sympathy, and much valuable assistance. To his pupil, Mr. William Burges, whose deep study of the mediæval arts rendered his services peculiarly valuable, the Author is indebted for many literary and pictorial contributions. To Mr. Edward Falkener, whose profound researches into classical antiquity have not prevented his accumulating inestimable material for the illustration of Christian art, the work is indebted for subjects introduced into no less than six plates, viz. Nos. XV., XXVII., XXIX., XXX., XXXII., XLII. From the portfolios of Messrs. F. C. Penrose, E. Willson, J. Gibson, C. Barry, jun., E. Barry, J. Johnson, E. A. Spurr, and Roberts Gowan, many valuable subjects have been most liberally contributed; and the Author takes the present occasion to express his thanks and acknowledge his obligations to those gentlemen. From Mr. Albert Way, the extent of whose researches into the technicalities of the manipulative processes of metal-working in the middle ages, has been testified by numerous admirable essays, printed in the "Archæologia" and in the "Journal of the Archæological Institute," much information and sympathy were derived; and it is probable that but for the kind encouragement of that gentleman the present work would never have been laid before the public.

In Messrs. Day and Sons the Author has met with publishers from whom he has received the most considerate treatment, and who have spared neither cost nor pains to reproduce the original drawings with the utmost perfection of chromolithography. With one or two exceptions, the whole of the engravings have been

executed on stone, by Mr. Francis Bedford; and but for his great artistic ability, and friendly interest in the subject and the Author of the work, it is questionable whether the same truth and beauty of delineation could have been possibly obtained.

This Preface cannot be concluded without rendering a tribute of admiration to the taste, learning, and industry displayed by M. Jules Labarte, author of the "Description des Objets d'Art qui composent la Collection Debruge-Dumenil," and of the article "Orfevrerie" in the great Parisian work, "Le Moyen Age et la Renaissance." From the body of information collected by the above-named gentleman and by MM. F. Seré and P. Jacob (le Bibliophile*) in other works, the principal portion of the notices of French metal-work has been derived.

* "Histoire de l'Orfevrerie et Joaillerie." Par F. Seré et P. Jacob (le Bibliophile).

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THEORY.

GENERAL PRINCIPLES.

It has been well remarked, by no less a man than the immortal Locke, "that the mechanism of the arts contains more true philosophy than the systems of philosophers;" and in that observation he has perhaps only echoed the great dogma of Lord Bacon, "that the history of the mechanical arts is the most important branch of true philosophy." These two splendid apophthegms, pregnant as they are with meaning, have been adopted with remarkable felicity by the French Encyclopédists, as mottoes to that portion of their great work which treats of the industrial arts. The English are indebted for the proud position they at present occupy in the world of manufacture, and the reputation they have gained for the intrinsic excellence of their productions, to their deep and persevering recognition of the absolute utilitarian importance of the studies recommended by these and other great economists; it is, however, only very recently that they have commenced the endeavour to superadd to their technical perfection some little of the refining influence of grace, and to investigate, in an earnest spirit, those fundamental principles which should govern and modify the specific nature and form of the desired alliance of use and beauty. One of the most important of those general laws which have been given to us, as the result of such inquiries, is that of the imperative necessity of adopting, as the basis of the design of objects executed in any material which nature offers to our use, a system of ornamentation strictly in harmony with the structure, chemical and mechanical, of the finished article—with the value of the materials of which it is composed—an association of idea connected with them, and with its purpose and probable destination. The systems of decorative treatment of two materials, similar in some essential qualities, but diverse in others, should differ in the exact ratio of those discrepancies, and from the continual and thoughtful observance of these *objective* conditions of nature, a scale of appropriate common-sense design would be in time established, within the limits of which the artist might exercise his *subjective* power without fear of extravagance.

Thus in the manufacture of metals any attempt at novelty, to be satisfactory to the cultivated taste, must be executed in subservience to at least a threefold influence: firstly, to that imposed by the elementary structure of the metal, whether gold, silver, iron, or bronze; secondly, to that deducible from all the processes of manufacture human ingenuity can devise, which must be conducted in obedience to the peculiar properties of each metal; and thirdly, to the condition of emotions dependent on a legitimate and sensible association of idea, founded upon a study of all that has been done in the best ages of the past. Bearing in mind the nature of these three dominant influences, we have, therefore, arranged our remarks under three corresponding divisions:—Theory, Practice, and History.

Gold, silver, bronze (a compound of copper, tin, and other alloys), and iron, are the principal metals pressed into the service of the arts, and the respective characteristics of design which best harmonise with their primary conditions of structure may be thus broadly indicated. Gold is the most valuable of all metallic substances, with the exception of platinum; it is the most malleable and ductile, the most beautiful in colour and brilliancy of surface, and it is the least susceptible of oxidation. From the possession of these qualities we may assume that it is most fitly destined for employment, in a massive form, in small objects only, on account of its rarity; in sheet, filagree, and wire, of the most exquisite tenuity, on account of its malleability and ductility; in the highest decoration, extended superficially, on account of its colour and beauty of surface; and as a covering, *revêtement*, or protection to other metals more easily injured by exposure to the air, on account of its extraordinary power of non-oxidation.

Silver is next in value, ductility, and malleability to gold; and though liable to tarnish, is easily cleaned by friction. It seems, therefore, naturally adapted to be worked with the hammer in plates, and beaten to its requisite degree of high or low relief, to be used in the massive form in larger objects than gold, not to be so susceptible of extension over large surfaces, but admirably adapted to protect and ornament the baser metals, in all household vessels and implements which require frequent rubbing to keep them fit for use.

Bronze, from its intractability and brittleness, excessive hardness of surface and facility of fusion, seems to demand for itself a completely different line of treatment from silver. Casting and chasing appear its proper and legitimate province, and it lends itself with singular felicity to the reproduction of the highest order of sculpture. Its compact texture, evidenced by its peculiar sonorous properties, dictates a system of hollow casting, and it is only in the most barbarous ages that it has ever been used in the massive form.

The twofold nature of the properties of Iron, in its cast and in its wrought state, are so well known that it is scarcely necessary to dwell upon them; but we may be content with remarking, that as the usual office of iron is essentially to strengthen and construct, it is most consistently employed, excepting where it serves as a support, in the massive form of solid casting; or when bent and wrought in simple forms upon the anvil, filed to regularity of surface and angle, and punched into open work plates by intense force; and thus elaborated, it should be strictly appropriated to utilitarian services.

Copper, from its malleability and toughness, is peculiarly adapted to the formation of domestic vessels by hammering and stamping.

The general scheme of manufacture thus dictated by nature, it has been the happy prerogative of man, during almost the whole period of his history, to adopt and perfect, with all the energy and skill with which he has been mercifully endowed by that Providence which has ordained that "by the sweat of his brow he shall live."

Sculpture in metal, partly on account of the much greater ductility and tenacity of the material, and partly on account of its peculiar colour and power of reflecting light, can rarely, however high its degree of finish may be carried, be mistaken for that which it professes to imitate. Hence it arises that elaborate execution of details may, and indeed should, be carried in metal to the most minute perfection. Works in gold or silver should, as a general rule (except in instances where an overpowering display of wealth is intended, in which case art does not much signify), be confined to small dimensions, and those relatively correspondent to the associations of idea connected with the rarity and value of each. It was from inattention to these conditions that many of the largest pieces of plate in the Great Exhibition of 1851 failed to excite a proportionate amount of interest, and that the eye dwelt with much greater complacency upon the smaller than upon the larger objects.

It has been ably remarked by a writer in the "Journal of Design" (vol. i. p. 35),—if we are not mistaken, by the eminent sculptor, Mr. John Bell,—that "the superior strength and compactness of metal over other materials, afford the opportunity also for superior fineness of parts in ornaments. Those piercings which would be inconsistent with firmness in wood or porcelain, are yet durable in metal; for convenience also and utility its weight necessitates, in many cases, a thinness and lightness of treatment. In many instances, such as in the use of the precious metals, to save cost in material, it is advisable to obtain thinness; most of our articles of silver being thus made of plates beaten up into the required form, the ornament being added afterwards. This has to be done carefully, or holes are apt to occur, injuring or spoiling the article; but if well done, the process of hammering necessary to bring them to the required form produces a superior firmness of substance.

"Lightness in the casting, also, of all metals, is considered a beauty. In the old bronze of Cellini's time the greatest care seems to have been taken to cast the work of an even thinness, and great attention accordingly had to be paid to the *cœur*, or core, of the mould, so as to leave in all parts an even space between that and the mould of the surface (for the melted metal to run into) to produce the desired effect. That most useful of all metals, iron, is no exception to this rule. No doubt in some cases, where it is put to purely utilitarian purposes, such as girders to support great weights, railway engines, tubular bridges, &c., the lightness that is sometimes introduced can hardly be said to be directly that of ornament; yet, in some cases of utility, its natural adaptation produces the most pleasing appearances. How almost fairy-like (although the eye has now become accustomed to it) is the effect of a suspension-bridge! And this is a good case in point; for here the employment of iron for a strictly utilitarian purpose presents a pendant fabric, at a distance especially, apparently of an almost web-like tenuity, and of infinitely greater lightness in effect than would

have arisen from the employment of wood, stone, or brick. Considering this metal more strictly in an ornamental view, we may almost lay it down as a canon that the lightest article will, *cæteris paribus*, be the best in effect. In lamps, candelabra, and even grates, fenders, and fire-irons, if we meet with a pattern that is agreeable, it will almost always be found to be fine and delicate, comparatively; and this observation will apply to all works in metal. From the tea-urn to the bronze statue, lightness of effect is desirable. In statues, which are indeed but the highest kind of ornament in form, how much more adapted to the nature and colour of the material, and therefore how much better in effect, is the well-known Mercury of John of Bologna, with the turn of each limb displayed against the sky, than the heavy massive works we sometimes observe, where heavy folds of drapery shroud the figure, and where scarcely any outline is relieved save that of the cloak that envelopes it.

"We are too apt, in endeavouring to overcome the mechanical difficulties of working inherent in any substance, to 'overleap the mark, and fall on the other side.' Thus, in bronze and brass work, we rush into a frittery, flimsy imitation of fluttering draperies, &c., in order to exhibit our perfect mastery over the difficulties of complicated casting. Now, by another and simpler mode of treatment, the effect produced might have been infinitely better. We might at once acknowledge the grandeur and propriety of a majestic colossal sphynx in granite or porphyry, but let Dorothea or Una, or any other popular piece of elegance, be worked out in one of the same materials, and our only feeling will be, how very much better it would have been in marble, alabaster, or biscuit. It is ten chances to one, too, if, in this attempt to display our manual dexterity, we do not altogether lose sight of propriety of form and adaptation of line to the direction of support, &c. Thus in some of those trebly-twisted scrolls, bent in all kinds of ways, and surmounted by all sorts of fruits, flowers, dolphins, cupids, monsters, &c., we are annoyed with a mechanical facility which, more moderately exhibited, might have pleased as much as it frequently disgusts."

It may appear scarcely necessary now to reiterate the dogma, that not only should designs for metal differ from those adapted for execution in wood or stone, but that designs for any one metal should be made different in style from those suited for any other. All the world will doubtless agree in the justice of the proposition, but how few there are who act upon it!

One of the main reasons for this neglect consists in the fact, that until very recently the study of the theory of design has never been made specific. The one *beau idéal* has been regarded as lovely in any form; and so long as curves were graceful, and limbs and features nicely turned, it was considered to make but little difference whether they were adapted for execution on a great scale in cast-iron or in stone; or whether they shrank into miniature monuments, in silver testimonials, or Dresden or French biscuit.

Our present endeavours being to realise a few of the special conditions of metal-work, we shall proceed to an examination of those directly affecting iron, bronze, gold, and silver, commencing with

IRON-WORK, AND THE PRINCIPLES OF ITS TREATMENT.*

As in philosophy we find a certain number of the thinking world unwilling to concede value to anything the utility of which they cannot clearly perceive, so, among those practically engaged in the great work of manufacturing production, a large body of individuals may be found who yield a title to merit, only in proportion to the degree of utilitarian contrivance manifested by the designer of any of the staple articles of commerce. It is to the class of men in the iron trade who hold such tenets that we are mainly indebted alike for wonderfully-ingenious and delicately-adjusted beams, girders, machines, roofs, &c.; and for the particularly ugly forms in which, until within a very recent period, these objects have been habitually designed. There are, again, others in philosophy who do not allow that any narrow scale of human wants and necessities can correctly determine intrinsic value in art or science; while, in the province of manufacture and its design, many may be met with who, dwelling on the existence of an inherent grace in form and proportion, attach a secondary value to the utilitarian portion of every object,—men who, in the speciality of iron-work, would determine the merit of a pump or a lamp-post by the possession of certain picturesque or graceful characteristics, rather than by the quantity of water raised by the one, or the facilities for the distribution of light afforded by the other.

* Many of these remarks originally appeared in a paper written by the author for the "Journal of Design."

To the first class of bigots (the Utilitarian), we may fancy, belong the careful cast-iron Constructionists, who generally build railway sheds *ad infinitum*, and bridges *ad nauseam*, with more skill than taste; to the second (the Idealist), the poetical and sometimes tumble-down genii, who raise imaginary towers on "the baseless fabric of a vision," cover dog-kennels with crockets and finials, turn stoves and clocks into cathedral façades, make bridges where water flows not, and too often sacrifice comfort and convenience to ornament and effect.

In cases where the diversities of opinion on matters of design to which we have referred exist, the differers being intelligent, we usually meet with a degree of mutual tolerance; while, in the present day, the system of the division of labour so circumscribes even such men's opportunities of study, that they are generally content to acquiesce in the opinion of any one who may expressly devote himself to a specialty which they may not have leisure to analyse properly, although their own experiences, as incidentally affecting the subject, may lead them to other and conflicting conclusions.

The results of the system of proceeding generally adopted in the iron trade (at any rate until very recently) singularly illustrate the enfeebling action of this excessive division of labour, combined with this easy-going tolerance. An industrious unit of our utilitarian class, absorbed in ingenious contrivances for the economy of production and developement of strength, fibre, clean-casting, &c. of the metal, instead of troubling his head with the study of such general principles of composition as would lead him to combine and refine successfully upon the elements it is his specialty to deal with, sends straightway for one of our ideal class, and confides to him the charge of making what is called a design; believing that the artist, from his professing art, must of necessity be able to do it; and receiving as gospel anything that may be prettily sketched or prettily asserted concerning the specific ornamental form which may be superadded to make his simple objects look anything but what he originally intended them for. Not troubling his head much about this, he hugs himself in the consciousness that his part of the business is very well executed, and that as he has "got the ornament done" by a crack, or at any rate glib artist, it is no doubt likely to do him great credit. Now, what, under the most favourable circumstances, is likely to be the result? The idealist, overflowing with associations of beauty in marble or stone, in painting or in architecture, will be found to have lavished his pretty fancies just in the wrong place, and in a form often so unsuited for manufacture as to entail an utter sacrifice of what he relied on for effect before his design can be embodied in practical form. Sometimes, alas! he breaks down from being set to speak a language, with the grammar and component elements of which he is utterly unacquainted, and so falls back upon the dreary precedent of what somebody else has just been doing, or copies and fits in a bit of Jupiter Stator scroll, Louis Quatorze shell-work, or Gothic panelling, thinking that that will be quite safe. Had our idealist but shaken off the trammels of his lot in the division of labour, and dared to enter into the charmed circle in which he believes the utilitarian to be necessarily the sole potent enchanter, the spell that bound his energies might have been broken, and he, too, might have successfully aided in subduing all sorts of lucky sprites to work out successfully his own and his co-magician's will and bidding, and together and of one mind they might have wrought marvels.

The lesson such experiences should teach is fit to be assumed as a corollary of the first importance, and is simply to the following effect:—No successful results can be attained in the production of beautiful iron-work, or beautiful anything else, until one of three things takes place,—either, first, until the manufacturer and designer are one individual doubly gifted; or, secondly, until the manufacturer takes the pains to investigate and master so much of the elements of design as shall at least enable him to judiciously control the artist; or, thirdly, until the artist, by a careful study of the material and its manufacture, shall elaborate and employ a system of design in harmony with, and special to the peculiarities so evolved.

It is quite true that the greatest works in iron which have been executed of late years have been worked out by civil-engineers, and the minor, but most fanciful ones, by architects; but it is so difficult to define where civil-engineering ends and architecture begins, that in the few remarks we are about to make we shall employ the latter term to represent, in addition to its ordinary meaning, so much of the science of civil-engineering as is essential to general construction, or amenable to the terms of existing styles.

Modern science having suggested iron as admirably adapted by its strength, elasticity, toughness, and durability for the purposes of construction, its introduction obviating many difficulties almost insuperable without it, and our necessity imperatively urging the adoption of a material possessing such qualities, uncongenial as it may appear to our previous notions of architectural taste, we have been compelled to place it on the

list of available building materials. It is due to the exertions, and to the necessity which stimulates the endeavours, of that class of architects which we have denominated the Utilitarian, to acknowledge that at the present time the science of the employment of iron in construction has reached a high degree of perfection; —that not only have its toughness, elasticity, specific gravity, capabilities of compression, and almost every possible contingency of its use, been nicely calculated and recorded, but that modern science has even laid down, and invariably provides for, the proportions of its expansion and contraction, and devised and experimentally proved the forms in which, with the minimum of metal, the maximum of strength is to be obtained.

When, on the other hand, we enter upon an examination of what the influence of taste has effected, in overcoming the several difficulties peculiar to the material, and to the natural disinclination of the eye to appreciate change in what it has been accustomed to admire,—when we look at the monstrosities of form in every style of design issuing from the foundries,—not to be once used and then perhaps lost sight of in obscurity,—but multiplied and perpetuated through the medium of casting,—thrust forward on all occasions as if in vain-glorious consciousness of their superlative violation of the laws of harmony and proportion,—we cannot but feel conscious that the steady course of utility has, at least in this instance, outstripped its more poetical associates, inventive genius and good taste.

We have glanced at the difficulties of system that must be overcome before iron can be rendered a pleasing object to the eye of taste, but it is only by a rigid examination of these points of difficulty, in relation to the several existing styles of architecture, that we can hope to estimate them rightly, since, so long as the association of ideas prevents a sudden revolution in matters depending on "the education of the eye," it is in the orbit of those styles that our ideas will perpetually revolve. Our climate, religion, and habits, are so utterly opposed to the introduction of either of the Egyptian or Indian styles, that they have merged rather into topics of curious inquiry for the antiquary than into subjects of important consideration to the practical architect. At this moment we are not enabled to remember more than two or three specimens of the former in the metropolis,—the Egyptian Hall, Piccadilly; a house and shop-front in Welbeck Street; and the entrance to the Abney Park Cemetery. Among the building designs in the Exhibition of Industry were two or three magnificent sarcophagi. In connexion with one of such buildings only have we seen iron introduced; and there, in nice keeping with glazed sash-frames and brown-holland blinds, have we seen a remarkably neat cast-iron railing, neatly painted, connecting the main masses of the "propylon." Such anomalies must ever result when lightness, the peculiar characteristic of the employment of iron, is placed in juxtaposition to the grand solidity that characterises these styles.

We now proceed to the pure, the chaste, the beautiful Greek; and first, we would notice the extreme dependence of the classical styles upon association for effect. In the graceful combination of strength and ornament in Grecian architecture do we not strive to realise to ourselves that union of mental vigour and elegant taste for art that so splendidly elevated Grecian intellectual power? Do we not look upon the ruins of their temples as hallowed relics of the purest art? Do we not study and re-study their orders and proportions but to catch one spark of the genius that fired them?

What, then, must be the feelings of the enthusiast for Grecian architecture, when he sees (as here, and now, he could not fail to do) a cast-iron girder thrown across an opening, a Grecian entablature and Grecian ornament stuck upon its face, and not a semblance of a column in the whole composition — when he sees a cast-iron post, with a Greek anti-cap stuck upon its head, about twenty diameters high, and no entablature, supporting a massive pediment—when he sees (as he must in almost every street) the graceful honeysuckle of the Erechtheion, shrunk in the atrophy of cast-iron, decorating the areas and balconies of houses and buildings of every description of purpose and every gradation of ugliness—when he recognises the simply beautiful variations of the lotus ornament expanded into lamp-posts, here the unfitting decoration of a Christian church, there flaunting on the lamps, area-gratings, and bar-columns of a gin-shop?

It would be diverging too much from our course now to enter on the question of the propriety of the introduction of Grecian architecture to this country, but we cannot refrain from noting the fact, that, within the last few years, the popular enthusiasm for that style of art, kindled by the labours of Stuart, Revett, Major, and the Dilettanti Society, sustained by the energy of Wilkins, Cockerell, Donaldson, Angell, Leake, &c., has materially declined. We would account for this, very mainly, by the obtrusive dragging forward and

multiplication of its most beautiful ornaments by means of cast-iron and cement. Whatever abstract beauty has existed, still exists in these decorations: yet as the most charming airs lose much of their once-stimulating effect when thrust upon the ear, out of all time and out of all place, through the medium of incessant street-organs, bands, and butcher-boys, so do these lovely ornaments lose their effect upon the eye when thrust forward and maltreated by cement, and doubly thrust forward and maltreated by cast-iron.

Many of our remarks concerning the moulding of iron into the forms, proportion, and details of Grecian architecture, will apply in an almost equal sense to the peculiarities of the Roman style, regarded from a similar point of view; with this exception, that in the general principles of design far greater latitude is allowable in this style than in the Grecian, and that in this, therefore, the judicious architect will meet with many more loopholes at which, with due judgment, his iron may be introduced, but subject always to at least these few points of caution, namely:—Never to imitate in iron ornament peculiarly identified with stone or marble; never to let his use of iron, either in girders, columns, bressumers, or roofs, interfere with the vital proportions of the order, its intercolumniation, or the pitch of the pediments; never to construct in iron what may be better executed in any other material; to recollect that a needless display of strength is just as weak as an appearance of deficiency, and that both excesses are to the educated eye almost equally objectionable; and above all, never to make his iron-work obtrusive, or to use any ornament to repletion.

"Within these limits there is space enough."

It is a great mistake to imagine that a so-called "rich" cast-railing—a thing all spike, flower, standard, scroll, and dog-rail—will make a poor building, or one destitute of ornament, look handsomer; like the beggar's cloak, it only draws attention the more readily to the poverty it almost invariably fails to conceal.

Another fertile source of unpleasing effect is the habit of taking away an essential component part of any order, and using it in a situation in which it does not fulfil the purpose for which it was originally intended;—such, for instance, as the introduction on the face of an iron bressumer of the entablature of one of the orders, without a symptom of the columns, its legitimate, invariable companions; the use of a shaft for a lamp-post, with as few symptoms of an entablature; or the bringing down of the dignified Greek Doric column to the situation of cast-iron baluster to a staircase or balcony—*vide* the British Museum, and London, *passim.*

Sufficient instances of the various "perils that environ the men who meddle with cold iron" have now, we imagine, even in these two styles, been brought forward to develope the truth of our assertion, that the present state of design, as applied to iron, in connexion with existing styles, is in a low condition, and apparently not conducted upon right, or, indeed, upon any fixed principles; and if, moreover, on a careful comparison of them with our own individual experiences, it should be found that improvement in the artistic treatment of the material within the last few years has been by no means adequate to the increase in its consumption, a more extended application of such material cannot, unless a radical change take place, but prove detrimental to the general progress and improvement of design in other substances.

In approaching the subject of iron-work in connexion with Pointed architecture, we feel so strongly the excellence of Mr. Pugin's observations, in the "True Principles of Christian Architecture," that we do not hesitate to reproduce them, as expressing the soundest possible judgment and criticism:—

"We now come," observes Mr. Pugin, "to the consideration of works in metal; and I shall be able to show that the same principles of suiting the design to the material, and decorating construction, were strictly adhered to by the artists of the middle ages in all their productions in metal, whether precious or common.

"In the first place, hinges, locks, bolts, nails, &c., which are always concealed in modern designs, were rendered in Pointed architecture rich and beautiful decorations; and this not only in the doors and fittings of buildings, but in cabinets and small articles of furniture.

"The early hinges covered the whole face of the doors with varied and flowing scroll-work. Of this description are those of Notre Dame at Paris, St. Elizabeth's Church at Marburg, the western doors of Lichfield Cathedral, the Chapter House at York, and hundreds of other churches, both in England and on the Continent. Hinges of this kind are not only beautiful in design, but they are practically good. We all know that, on the principle of a lever, a door may be easily torn off its modern hinges by a

strain applied at its outward edge. This could not be the case with the ancient hinges, which extended the whole width of the door, and were bolted through in various places. In barn-doors and gates these hinges are still used, although devoid of any elegance of form; but they have been most religiously banished from public edifices as unsightly, merely on account of our present race of artists not exercising the same ingenuity as those of ancient times, in rendering the useful a vehicle for the beautiful. The same remarks will apply to locks that are now concealed and let into the styles of doors, which are often more than half cut away to receive them. A lock was a subject on which the ancient smiths delighted to exercise the utmost resources of their art. The locks of chests were generally of a most elaborate and beautiful description. A splendid example of an old lock still remains at Beddington Manor House, Surrey, and is engraved in 'Pugin's Examples.' In churches we not unfrequently find locks adorned with sacred subjects chased on them, with the most ingenious mechanical contrivances for concealing the key-hole. Keys were also highly ornamented with appropriate decorations referring to the locks to which they belonged; and even the wards turned into beautiful devices and initial letters.

"In all the ancient ornamental iron-work we may discern a peculiar manner of execution, admirably suited to the material, and quite distinct from that of stone or wood. For instance, tracery was produced by different thicknesses of pierced plates laid over each other. Leaves and crockets were not carved or modelled and then cast, but cut out of thin metal plate and twisted up with pliers, and the lines or stems either engraved or soldered on. By these simple means all the lightness, ease, and sharpness of real vegetation is produced at a much less cost than the heavy flat foliage usually cast and chased up. It is likewise to be remarked, that the necessary fastenings for iron-work were always shown and ornamented. Bolts, nails, and rivets, so far from being unsightly, are beautiful studs and busy enrichments if properly treated. Large tracery was either formed of round iron, like a stem twisted into intersections, or of flat iron bars of different thicknesses riveted together, and the edges chamfered by filing. Railings were not casts of meagre stone tracery, but elegant combinations of metal bars, adjusted with due regard to strength and resistance. The fire-dogs, or andirons, as they were called, which supported either the fuel-logs where wood was burnt, or grates for coal, were frequently of splendid design. The ornaments were generally heraldic, and it was not unusual to work the finer parts in brass for relief of colour and richness of effect. These form a striking contrast with the inconsistencies of modern grates, which are not unfrequently made to represent diminutive fronts of castellated or ecclesiastical buildings, with turrets, loopholes, windows, and doorways,—all in a space of forty inches. The fender is a sort of embattled parapet, with a lodge-gate at each end; the end of the poker is a sharp-pointed finial, and at the summit of the tongs is a saint. It is impossible to enumerate half the absurdities of modern metal-workers; but all these proceed from the false notion of disguising, instead of beautifying, articles of utility. How many objects of ordinary use are rendered monstrous and ridiculous, simply because the artist, instead of seeking the most convenient form, and then decorating it, has embodied some extravagance to conceal the real purpose for which the article has been made. If a clock is required, it is not unusual to cast a Roman warrior in a flying chariot, round one of the wheels of which, on close inspection, the hours may be descried; or the whole front of a cathedral church reduced to a few inches in height, with the clock-face occupying the position of a magnificent rose window. Surely the inventor of this patent clock-face could never have reflected that, according to the scale on which the edifice was reduced, his clock would be about 200 feet in circumference, and that such a monster of a dial would crush the proportions of almost any building that could be raised. But this is nothing when compared to what we see continually produced from those inexhaustible mines of bad taste, Birmingham and Sheffield. Staircase turrets for inkstands, monumental crosses for light-shades, gable-ends hung on handles for door-porters, and four doorways and a cluster of pillars to support a French lamp; while a pair of pinnacles supporting an arch is called a Gothic-pattern scraper, and a wiry compound of quatrefoils and fan-tracery an abbey garden-seat. Neither relative scale, form, purpose, nor unity of style, is ever considered by those who design these abominations; if they only introduce a quatrefoil or an acute arch, be the outline and style of the article ever so modern and debased, it is at once denominated and sold as Gothic."

Any observations we could offer upon our subject in connexion with Gothic architecture, would but be superfluous; yet we cannot refrain from bearing a humble tribute to the truth and justice of many of Mr. Pugin's propositions. The other day, in one of the modern churches, our eye was arrested and our attention

distracted by noticing the substitution of iron for stone piers to divide the nave and aisles; they were, of course, kept thin to facilitate the view of the preacher and east end; their effect, consequently, to the eye of any person accustomed to the ordinary rules of ancient proportion, would be that of inadequacy to support the superincumbent weight; strongly reminding one of spindle-shanks,—mightily suggestive of Gothic in a consumption!

It is the more melancholy that such defects should commonly exist in modern attempts to connect iron-work with Pointed architecture, since it is in the mediæval examples of processes and handicraft that we meet with the highest triumphs of the smith's art. In such compositions as the well at Antwerp, the enclosures of Henry VII.'s, Edward IV.'s and Queen Eleanor's tombs, the beautiful doorways of Ely and Rouen Cathedrals, the hinges of Lincoln Cathedral, St. George's Chapel, Merton College, &c., we meet with specimens easily referred to, and which, if rightly studied, should convey to us tacit lessons, which, conscientiously acted up to, would lead with certainty to the legitimate treatment of Gothic iron-work at once in point of general form, and in all the refined detail of fabrication.

Among the happiest specimens we have seen of revived mediæval iron-work of a simple kind, is the railing surrounding a tomb which has lately been erected in Rochester Cathedral. In the smaller objects of ecclesiastical use, Mr. Potter, the *protégé* of the Cambridge Camden Society, has produced some creditable works; but in that particular branch, as in many others, Mr. Hardman of Birmingham reigns supreme—*facile princeps*.

As the styles of national architecture approach our own time more nearly, inconsistencies in the employment of iron become less apparent; and although in connexion with the classically Italian styles of Palladio and his contemporaries, the architect is in danger of some of the stumbling-blocks we have connected with Grecian and Roman art, yet in the style of the period when Italian forms and details were engrafted upon our habitual domestic modes of construction, we have more nearly approached success than in most of our other endeavours to wed the *dulce* with the *utile*.

Specimens of the happiest treatment and execution of iron grilles and gates may be met with in the rich and flowing lines of scrolls and flowers worked in wrought-iron, decorating the entrances to many buildings of the days of Queen Anne and the two first Georges,—evincing no ambitious assumption of the main features of the style it decorated;—not stealing here a moulding from stone, and there an ornament from wood, all bedaubed with a green and copper imitation of bronze, but exhibiting the proper and distinctive treatment of a subservient material ornamenting buildings, with the architectural character of which it assimilates, yet does not interfere. Many specimens of this elegant style of railing, &c., about the odd and quaint habitations of our old English gentlemen, and more especially at Hampton Court, Oxford, and Hampstead, still attest the surprising dexterity of the smiths they must have employed. With some modifications this style may be said to have predominated from the reign of Elizabeth to the end of that of George II.

From considering our progress in aping effete conventionalities let us turn to the origination we may be said to have given to the developement of new styles dependent on the imperative requirements and giant mould of modern civil engineering. We shall there find the "Lamp of Power" shining over all, while the "Lamp of Beauty" occasionally lends its purer, happier ray, at least partially, to illuminate the objects with which it is brought into contact.

In those wonders of the world, the Menai and Conway Bridges, the simple and severe lines of the architecture happily accord with the lofty simplicity of thought, which would have evaporated had the frivolities of ornament been applied to it. In the High Level Bridge, at Newcastle, Mr. Stephenson has succeeded in uniting grandeur of line with absolute perfection of scientific contrivances and economy of material. In the Hungerford Suspension Bridge, and in many of his other works, Mr. Brunel has shown that his independence of meretricious and adventitious ornament is as great, and as above prejudice, as his engineering works are daring in conception and masterly in execution. From such beginnings as these and the Crystal Palace, with its revival at Sydenham, what future glories may be in reserve,—when England shall have systematised a scale of form and proportion—a vocabulary of its own in which to speak to the world the language of its power, and its freedom of thought and feeling—we may trust ourselves to dream, but we dare not predict. Whatever the result may be, it is impossible to disregard the fact that the building for the

Exhibition of 1851 is likely to accelerate the "consummation so devoutly to be wished," and that the novelty of its forms and details will be likely to exercise a powerful influence upon national taste.

In the design of the thousand-and-one miscellaneous objects which may be included in the term "fancy castings," the English have made considerable progress of late years; and we trust that as the practice of ornamental modelling becomes more universal among the workmen, they may soon rival the delicate foliage and handling of ornament which have rendered the French masters so celebrated.

In the railing executed for Mr. Hope's mansion in Piccadilly the English manufacturer has an opportunity, without going far from home, of realising to himself the peculiar excellencies to which we allude. In it he will also recognise, if we mistake not, a superiority rather of hand than of head, a fertility of fancy rather than a refined perception of combination of line, or purity of form, an illustration of the practice of scribbling in the ornament without the revision necessary to bring the lines and proportions into proper harmony. The somewhat bungling stilting of the capital will suffice to illustrate our meaning. It is, however, a specimen, the beauties of which are far more conspicuous than the faults, and it would be well if there were many such in London to criticise.

To the exertions made by the Coalbrookdale Company to elevate the character of the design of fancy castings too much praise cannot be given. The efforts they have made to elevate iron into a material for expressing the loftiest order of fine art, and the spirit with which they have enlisted the highest sculpturesque ability redound to their credit.

No reflecting person can give a thought to the subject without perceiving that English formative art is changing in its conditions almost from hour to hour, that there is a spirit of impulse abroad striving to effect reform, without revolution, in the science of design as in politics, and that an evil instead of a "good time is coming" for those who may choose to long "stare super antiquas vias." What may be the ultimatum reached by iron, and how far its treatment may achieve approximate perfection in our time, is a problem none can solve. Schools of design may certainly do something, commercial spirit and energy much more, cultivation on the part of the public the most; how these have been acting lately the Exhibition of 1851 has shown. We can only now express a hope that men of genius will throw off their apathy, will condescend to give their best attention to that which sooner or later must become an all-important branch of the profession of design, and so elevate their treatment of this material, that our grandchildren and great-grandchildren may not look back upon us, their progenitors, as unworthy sons of this most essentially *ferrea ætas*.

We shall proceed to offer a few remarks on,—

BRONZE-WORK, AND THE PRINCIPLES OF ITS TREATMENT.

From the earliest ages of the formation of the alloy bronze has been constantly adopted as the material best suited to convey severe sculpturesque expression. It is from a careful examination of the works of the ancients that the student is best enabled to recognise the principles upon which compositions intended for reproduction in this material should be based. He will at once find that striking differences of proportion manifest themselves between statues executed in marble and those of which bronze forms the material. In consequence of the dark colour of the latter, every portion of the form, in order to be clearly defined, requires a certain amount of conventional treatment; so to increase the sharpness and precision of the several forms and markings, as to enable the spectator to appreciate them at that point of view, from which he may likewise take in the general outline, upon which the effect of the whole figure depends.

A comparison of the Greek specimens of bronze-work with those of Verrocchio and Donatello, will at once illustrate the precise points of exaggeration, by means of which great solidity of shadow was invariably attained. The light being supposed in every case to descend from above, the under surface of every projection intended to throw a shadow upon the surface beneath, was always hollowed upwards, and brought to a fine edge only at its extremity. Thus the eyebrow was marked as a sharp line, and the eyes sunk, as it were, in hollow sockets; increasing the depth of the tint of shadow cast by the eyebrow, by turning away from it those surfaces likely to receive the light reflected from the cheek, nose, or other adjacent illuminated portions

of the head. The nostrils were likewise brought to sharp edges; the mouth, at the junction of the lips, was cut upwards into curious cavities; and a close examination of the whole form of the head would serve to show that, in every part, the artist was guided in his modelling by a consummate knowledge of the means necessary to compensate for and overcome the optical difficulties attaching to the material in which he worked.

One important element in determining the precise form of a bronze statue will be found to be a consideration of the background against which it must be relieved. Where that is light, as when the statue is brought against the sky, greater fulness must be given to the proportions of the limbs; since, from its superior power, the light is apt apparently to invade, and, consequently, diminish the silhouette. Where, on the other hand, the figure is thrown up from a niche, or from a dark background, a contrary system of proportion should be adopted, to restrain the lighter-coloured substance of the statue from appearing to swell on to its darker ground.

Another very important consideration in designing works of art of a high class in bronze is that of the varying points of view from which the object may be examined; for, as the effect of any statue in so dark-coloured a material must mainly depend upon its contour, care must be taken that that contour be clearly marked, and not liable to confusion, from such an arrangement of the parts of the figure as would permit any one of them to be awkwardly lost or merged in another. Hence those attitudes in which the figure approaches the condition generally known to heralds as "displayed," are best adapted for execution in this material. The celebrated Mercury of John of Bologna, to which we have already referred, is, perhaps, the happiest existing instance of such a mode of treatment. In important equestrian figures we too frequently have occasion to regret that a style of costume is adopted which, when the statue is viewed from such a distance that the spectator cannot appreciate its precise form, tends to convey the uncomfortable impression that the body which it serves to clothe has swollen to the dimensions of the flowing garments. In sculpture it is no doubt an extremely difficult task to provide, in all cases, against the risk of this confusion of parts; but if attention to this point is important in works executed in a material like marble, the pure colour of which shows, at a great distance, the minutest variations and sinuosities of form and plane, how much more so must it be when a material like bronze is used; in which the eye is misled, not only by its want of power to distinguish forms in a material of so deep a colour, but by the varying lights and uncertain reflexes of its metallic surface.

It may be assumed, therefore, that in all large works in bronze extreme simplicity is an indispensable requisite. When, however, the skill of the artist is exercised upon objects of a small scale, this attention to simplicity is no longer so cogent a necessity. In cabinet specimens, destined for close inspection, the workers in bronze should take advantage of every refinement of execution calculated to heighten the effect and texture of the object he is called upon to produce. For this purpose he will do well to examine with attention the respective styles of the two great Italian schools of bronze-work,—the earlier, or soft style, represented by the works of Ghiberti, Luca della Robbia, and Sansovino; and the later, or bold style, by those of Donatello, Verrocchio, and Pollaiuolo, and ultimately of the great Michael himself. In the former of these styles he will find an attempt to express, by comparatively direct imitation, every variation of form existing in nature. The exact quality of the object intended to be imitated is recalled to mind by an abundant use of the graver and chasing-tool, and by a sedulous endeavour to vary the texture and roundness of every portion of the flesh or drapery. This style of positive imitation, it will be found, is redeemed from frivolity and feebleness by an intense appreciation of beauty of line on the part of those who practised it. The artificial nature of the composition redeems the too natural style of the treatment; and the power of the artist is revealed in his exquisite appreciation of grace and beauty.

In examining the works of the latter school the student will perceive, on the other hand, that the aim of the sculptor was rather to convey a vigorous general expression,—some strong and palpable emotion. With this end in view, he has avoided dallying with the graces of the several parts of his composition, and has sought only to combine them into one forcible whole. Hence, in the details of the treatment, the graver, chasing-tool, burnisher and point, are no longer used to indicate each particular hair, and every minutia of form; but punches, files, hammers, and pliers, have conduced to the production of forms, which, although they seem rude and careless on a close inspection, fall at once into their appropriate places when examined from the proper point of view, and fitly contribute to the general effect of the work.

It would be unjust to extol either of these schools to the disparagement of the other: it would be alike

unwise to recommend to the student too great a reverence for Donatello, or too great a love for Ghiberti. We would rather have him take into consideration, without prejudice, how far a leaning to either style of execution may best accord with the nature of the subject upon which his own ability is to be exercised. The rude vigour of Pollaiuolo would as little comport with the treatment of a Venus, a Psyche, or a Seraph, on a small scale, as would the softness of Ghiberti with the awful grandeur of a colossal Jove or an enraged Achilles.

It has been justly remarked, both by M. Quatremere de Quincy and by Sir Charles Eastlake, that, in the execution of sculpture, care must be particularly taken that those portions of the work which represent objects in reality of the same material as that in which they are represented, should be treated in a manner so obviously conventional as at once to undeceive the spectator as to the possibility of their actually being what they represent, instead of mere imitations. This rule is particularly to be observed in the imitation of metal-work. The details of armour and harness are frequently dwelt upon with such a degree of elaboration, as to make us regret that the sculptor had not obtained, from a better manufacturer, an actual suit of the former, or set of the latter.

The just principles of designing small works in bronze have been peculiarly studied by our French contemporaries, and have been carried by them in many instances to a very high pitch of perfection. Few have done more in France, of late years, in contributing to a recognition of the dignity of the material, than Henri de Triqueti, whose elaborate gates to the Madeleine are among the finest bronze works which have been ever executed. It is much to be regretted that in England few living artists have specially devoted themselves either to the practice of the mechanical process of bronze-founding, or to the study of the best conditions of its design. It is true that, from time to time, very many large and important works are modelled and cast with considerable ability in foundries in various parts of the kingdom; but it would be difficult to believe that any of them have been expressly intended for execution in metal. We have, at all events, been unable to trace in them any distinction between the conventionalities employed, and those which the same artists would probably have used in the execution of the same subjects in stone or marble. We firmly believe that the ancient sculptors adopted a completely different system of modelling for each of these materials, and regarded their respective capabilities in a just and proper light; never executing in bronze subjects better adapted for marble, nor in marble those better suited for bronze.

Mr. Hatfield has recently done much to improve the manipulation of the art of bronze-casting and colouring; and it is to be hoped that, at no distant day, we may be fortunate enough to create a national manufacture of objects in this beautiful material. So soon as a taste for bronze statuettes shall become at all general in this country, the public will at once perceive the nature of the conventionalities necessary to be resorted to in such compositions, and their awakened taste will so far react upon artistic education as to lead to efforts which, if not more vigorous, may at least be more loftily directed.

GOLD-WORK, AND THE PRINCIPLES OF ITS TREATMENT.

We can imagine few lessons which would prove of greater advantage to the jeweller of the present day than a careful study of the exquisite specimens of ancient art, which are preserved in the Etruscan Museums of Pope Gregory XVI. and the Cavaliere Campana of Rome. In those collections he would find works adapted for personal decoration, of the most exquisite design, and executed by the simplest processes. In some of the beautiful golden garlands, which the ladies of Etruria were wont to bind around their brows, he would at once perceive how skilfully an idea borrowed directly from nature—that of entwining together a simple group of leaves and flowers—may be carried out, without in any degree infringing upon the conventionalities proper to the material employed. He would see collars, upon portions of which the most exquisite patterns are defined by filagree, disposed in graceful curves and scrolls, and soldered to the sheets of gold forming the substance of the work. The edges he would find bound with a twisted wire, to give strength to the whole, and enriched with small and beautiful pendants, hanging from them like a precious fringe.

If it were possible to place by the side of such specimens some of those heavy bracelets, simulating uncomfortable snakes or ponderous fetters, and earrings decorated with unmeaning shellwork, which abound in the shops of the modern jeweller, it would be impossible to avoid the conclusion that if the mechanical facilities of production are perfectly comprehended in the present day, an almost total ignorance of the just

principles of special design is no less generally prevalent. When we reflect on the extreme beauty of gold, on its great value, and on its association in our ideas with all that is most rich and brilliant, it is the more to be regretted that art is so rarely allied to manufacture in its elaboration. It appears as if the old ideas of barbaric magnificence still cling to its use — that while in bronze and in the baser metals the artist feels deeply (or, at least, acknowledges) the responsibilities of his profession, in gold any style of form is admissible,— and that a multitude of sins are covered by the brilliancy of sparkling jewels and the value of the metal which surrounds them. It is most remarkable that while sums of almost any amount, determined only by the caprice or fashion of the day, are constantly given for diamonds and other precious stones, the nature of their setting should receive so small an amount of attention. It would indeed be a triumph of art so to elaborate the precious metal surrounding the diamond as to make the frame more beautiful than the picture it contains.

But whilst we urge this deficiency in much of the modern design applied to jewellery, let it not be imagined that we could regard as any improvement a reduction of the large designs which find fitting expression in marble or in bronze, to the miniature proportions in which gold must generally be worked. It is ever to be remembered that jewellery, after all, is but a personal adornment, and that if, by imitative art, any animated objects are represented in it, they should take the form rather of *concetti* than of serious compositions. The world-wide celebrity of the Italian school of goldsmiths is due to the taste with which Cellini, Caradosso, and other masters, enriched the jewels of the Cinque-cento age with the most exquisite *lavori di minuteria.* Unfortunately, too few relics of that school exist, and it is rather by tradition than by actual evidence that we can fully appreciate all its beauties. The study, however, of such works as time has spared, and of such drawings or designs as are still in existence, has unquestionably stimulated the French jewellers of the present day in the production of many very beautiful modifications of the mediæval and Cinque-cento styles. MM. Froment-Meurice, Rudolphi, and Morel, have in this way produced many works which deserve the highest commendation; and it was gratifying to observe in the specimens contributed to the Great Exhibition by Messrs. Garrard, and Hunt and Roskell, that their attention had been directed to similar sources of design. A careful examination of the elaborate paintings of our ancestors, by Sir Antonio More, Zucchero, Holbein, and even Vandyck, will afford many illustrations of the beauty of design of much of the ancient jewellery of this country. It is too much to be feared that, in the productions of modern portrait-painters, our descendants may seek in vain for any equivalent to the beautiful goldsmith's work of former days.

The very limited use of enamel in connexion with jewellery is greatly to be regretted; since the elegant works of Cellini, and indeed of every great master of the goldsmith's art, have been greatly indebted to that substance for pleasing and appropriate decoration. We venture to hope that the details, which it is our intention to give in subsequent pages, of the processes employed in the several varieties of ancient enamel, may tend in some degree to a recognition of the importance of this elegant adjunct to the splendour of rich metal-work. The unwillingness of modern artists to regard enamel otherwise than as a vehicle for pictorial representation, is perhaps in some degree to be ascribed to the extent to which the system of the division of labour has been carried in this economic age. Had the labours of our enamel-painters been associated with those of practical manufacturers, there can be no doubt that the specimens of English jewellery, in the Great Exhibition of 1851, would have occupied a yet higher position than they did on that occasion. Much as we must admire the works of such artists as Mr. Bone and Mr. Essex, we cannot but regret that their attention has not been directed to the union of their beautiful art with that of the goldsmith. Their style, based on the practice of their great predecessors, Petitot, Bordier, Zinck, Hance, Guernier, Moser, Meyer, &c., is confined to painting only, and not extended to manufacture. Could we but see a little of their accomplished ability brought to bear upon the revival of some of the ancient systems, such as the "grisaille" of Limoges, a portion of their grace imparted to the handicraft of the common workman, we might then have great hopes, that while novelty was sure to arise it would not be vulgarised by betraying the want of education of its originators, and that while the intelligence and intellectuality of the workman would be stimulated, the public would ultimately gather "a ripe and golden harvest." As the Abbé Texier tells us, in a passage of extreme eloquence, "in the middle ages, art and manufactures were blended and identified; art gained by this affinity great practical facility, and manufacture much original beauty."

SILVER-WORK, AND THE PRINCIPLES OF ITS TREATMENT.

There are few subjects on which we entertain more sanguine hopes than that the beneficial effects of the Great Exhibition will be very speedily manifested in the improvement of the ordinary forms and types of modern English works in silver. In those important pieces of plate on which such large sums of money are annually expended, we have been too long accustomed to content ourselves with reducing, to some foot or two in height, a great allegorical monument, such as those which desecrate, rather than decorate, the sacred fanes of Westminister Abbey and St. Paul's. In silver, as in marble, we have been too long satisfied with personations of Virtues and Graces, Arts and Sciences, disposed around a statue of the individual to whom the so-called "testimonial" is presented. Fortunately, we are now beginning to perceive that something better may be done, and that at the additional expense only of a little more thought and study.

It is justly remarked by Mr. Redgrave in his "Report on Design," appended to the General Reports of the Juries of the Great Exhibition,* that "if we contemplate some of the inventions of the artists, and some of the thoughts which they have wrought out, we shall be indeed surprised that such puerilities could be dwelt on long enough to execute them as works of art, and still more that manufacturers, so shrewd as they generally are, should be found to engage in their production, were it not sufficiently evident that there is a large and wealthy public whose taste does not rise above such *art*, proved by its becoming patrons and purchasers. What can justify the employment of the precious metals, and what ought to be the more precious labours of artists, upon huntsmen and ploughboys, to render them with all the coarseness of their garments and the texture of their hose? or who but the givers of a testimonial, relying on the known taste of its receiver, would require art to be degraded into the mere imitation of a hedge-row occurrence on a hunting-day when the sport was successful; knee-breeches and top-boots being as important items in the groups as the hounds, horses, and the portraits of the individuals whose good fellowship it commemorates? It is such art in the more precious metals, employed on such thoughts, that leads, in the imitative manufactures, to the many paltry inventions which are found to prevail therein. Rachel at a well in a rock, under an imitative palm-tree, draws—not water, but ink: Burns' shepherdess would find the same black fluid in the formless well by her side; a grotto of oyster-shells with children beside it, contains, not a light, but an ink-vessel; the milk-pail on a maiden's head contains, not goat's milk, as the animal by her side would lead you to suppose, but a taper. Such works are akin to épergnes with the hippopotamus and his keeper; or Paul and Virginia under a palm-tree that upholds the glass for flowers on its top; or Apollo dancing, supporting at the same time a glass épergne twice his own size; and inventions of equal or greater *novelty* wrought out with great waste of skill and labour. Even when we arrive at really artistic works in this style, of which happily there are many, it is more than doubtful whether the ornamentist would not be more suitably employed upon them, and an ornamental and architectural construction first obtained, before art was called in to aid in their completion. It is not pleasant to add, that the above strictures more especially refer to English productions. It is true that such works have often a local significance or an individual importance, causing their exhibition here, and making it less likely such should be exhibited by the foreigner than plate of a specific use, or ornamental works whose characteristics are more general; but it is impossible to deny that the taste of the class who purchase or commission these works abroad must be higher than our own.

"In France, for instance, we find testimonials and prizes taking the shape of art rather than of massive metal. The President of the Republic, in contributing a prize to the winner of the Chantilly races, presents a shield, on which are four reliefs, illustrating racing in various ages of the world; and when the *workmen* of Montlucon and the inhabitants of Lot desire severally to present testimonials to Generals Changarnier and Cavaignac, the weight of silver is of far less importance in their eyes than the rare beauty of the art-workmanship. These works are exhibited by M. Froment-Meurice; and the two latter—two beautiful swords—are choice examples of design and chasing. Moreover, it is worthy of notice that in such works the artist does not consider his vocation a separate one, but regards the utility while he perfects the art. In both the above sword-hilts, the ornament (a group of figures) has been so thoroughly adapted and composed for its purpose as a handle, that it is perfectly accommodated to the grasp; which is the case also with a beautiful short sword, ornamented

* Page 737.

with the history of St. Hubert, executed by M. Marcet, and exhibited by Marrel Brothers (France, 331) in the same department."

When we recollect the peculiar properties of the precious metals—their strength and ductility—it must be at onee apparent that details of execution can be rendered in them, which could never be expressed in materials such as marble or wood. Hence, when we seek to elevate, to its highest perfection, technical execution in gold and silver, we must at once perceive that a new field is opened for the sculptor's art. By means of gravers and chasing-tools; and, by the process of *repoussé*, which admits of a constant variation of relief, and the correction of redundant form, an amount of finish can be given to subjects of an eminently sculpturesque character, such as could not be imparted to them when executed by any other method. In the best ages of the goldsmith's art, this minute execution was carried to great perfection. By the Greeks, by the Italians of the Cinque-cento age, by the modern French; and especially by that exquisite artist, M. Vechte, refinements of texture and manipulation have been practised, which confer on objects executed in silver an eminently peculiar and distinctive character.

It is one of the agreeable features of this process that the metal can be used in the greatest degree of tenuity. While its effect in that state is even better than it could have been had the metal been more substantial, and while the art is more excellent, the cost of the whole is so far reduced that it becomes a question, the solution of which scarcely admits of a doubt, whether the nature of the material should not be entirely disregarded, and the whole value of the object made to depend upon the art which may be lavished upon it.

One cause of the defects in our productions in the precious metals may probably be the reluctance of our artists to study practically as workmen. Too many of those employed to design for silversmiths accept the commission only as a means of pecuniary support; firmly believing that such employment is, in some degree, a derogation from that abstract condition to which, from want of education, or capacity to apply *art* rightly, they would seek to reduce it.

Mr. Redgrave wisely remarks, "The truth seems to be, that in England one artist designs, and perhaps makes the model, whilst another is employed to produce it in the metal. Thus we find works designed with great ability, and modelled with much knowledge, and evidently by artists of great professional excellence, yet these works are completed in the metal with every possible littleness of imitation, serving only to degrade and vulgarise the art it is employed upon; and this frequently is caused by the surface treatment and the mode of execution, wherein imitation has taken the place of art. Thus the true artist does not produce the texture of the fur of animals hair by hair, but gives its general expression by some conventional rendering, by the indications at the parts where the skin folds, or by tooling to emulate the lustre of its gloss. In the same way true art does not imitate the materials of our dress by the threads of its manufacture, but indicates them rather by the shape and contour of the foldings. Yet in the works under examination, the surface is often subjected by the workman to a most laboured treatment, labour without knowledge, which dwells more upon hairs and threads, upon details and buttons, than on the form of a joint, or the bones of an extremity: the one is a labour that requires no exercise of thought, nothing but mere dexterity; the other requires a workman not only educated into a knowledge of the parts, but who can enter into the feeling and intentions of the designer. This dwelling with complacency on mere labour, and evident satisfaction with its tedious felicities, can only arise from the habit of giving the models of the superior artist into less skilful hands, to be completed in metal."

One of the most fertile sources of the disagreeable effect in many compositions of the silversmith's art is to be found in a neglect of the consistent arrangement of the structural lines, which form, as it were, the building up of the design. By a perversion of that beautiful quality of strength in tenuity peculiar to metal, we too often find the stalk of a flower, or some such feeble object, called upon to do duty as a support to a vase, or other heavy object, beneath which, if real, it would inevitably break down. A combination of vine-leaves, with no trellis to sustain them, serves to sustain a ponderous wine-cooler; and thus neither is the strength of the metal fitly represented, nor is any association of idea connected with the character of the ornament imitated in any way preserved.

In a paper read to the Society of Arts, being "An Attempt to define the Principles which should determine Form in the Decorative Arts," we have entered at some length into the general principles of imitation and its restriction, upon which the special laws of design (in silver as in other objects) are dependent: it will not,

therefore, be necessary to enter in this place into a minute examination of the limits to which imitation may be carried in that material. We may, however, draw attention to two or three indispensable requisites to a good design for silversmith's work. In the first place, the object must be so formed as to fulfil the purpose for which it is intended;—that object must in no way be disguised, but, on the contrary, should be apparent on the first cursory inspection;—the general outline should be symmetrical, and the disposition of the various parts so proportioned as to appear strong, and equal to the constructive duties they may be called upon to perform;—the amount of ornament should be proportioned to the purpose of the object, and the means and condition of its proprietor;—there should be no direct imitation of Nature, and yet no perversion of her forms; and lastly, it would be well if a system of judicious contrast of plane surfaces and enrichment were carried throughout such works, and each ornament applied only to those points where the general form appears to demand accentuation.

In productions in silver, as in every other material, there are a certain series of conventionalities to be observed and general conditions to be attended to, which cannot be conveyed within the limits of a treatise like the present, but which must rather be acquired by long, laborious, and persevering investigation, by the repeated experiments, and frequent disappointments, of the student. It is only by the accumulation of the observations of those who have thus become masters of their art, by the record of their varied practice, and by an analysis of their system of treatment, that a grammar of the special design, proper and appropriate to metal-work, can ever be arrived at. At present we are ourselves rather in the position of a fellow-student inviting to learn, than a professor engaging to teach. Let it ever be remembered by the practical artist that, while it is impossible too highly to sublimate the ideal portion of his art, it is through material form alone that he can convey to his fellow-men the glowing creations of his imagination. Thus he has a double end to perform: to be at once subject to the conditions of the materials in which he works, and master of the art of struggling with their difficulties, and enhancing their beauties, so far as to dignify at once the material and the immaterial portions of his labour. To fitly carry out this object, his studies and his powers should be alike extended and yet concentrated.

When we bend our thoughts to a contemplation of the genius, taste, and delicate refinement of Visscher, Cellini, D'Arphes, Sansovino, Ghiberti, and many other artists,—when we realize to ourselves their industry and patience as mechanics, and their judgment, experience, knowledge, and energy as artists, we cannot but feel that to produce works approaching, far more excelling, those which have been executed in the past, qualities of the most varied kind must be united. Let the student of design but make the endeavour to combine these in his own person—let him but struggle to add to a refined appreciation of the highest objects of his art a thorough mastery over the immediate processes of manufacture, and the joint production of his hand, eye, mind, and soul, will then bear the true and unmistakeable mint-mark of pure and beautiful individuality.

On the extreme value to the artist of earnest inquiry into the intellectual and mechanical conditions of the objects on the proper design of which he would exercise the godlike gift of genius, there can be only one opinion: and we cannot do better than conclude our remarks in the words of Lord Bacon, who points, as the true source of novelty, to the fact, that "from the knowledge of physical causes there cannot fail to follow many indications and designations of new particulars, if men in their speculation will keep one eye upon use and practice."

PRACTICE.

GENERAL PRINCIPLES.

The metallurgic art commences with the extraction from the ores of those precious substances which, as metals, have played so important a part in the civilisation of the world; but as the artist's connexion with them commences only when they are delivered to him in a state fit for working, we shall not enter into the details of any of the methods employed to free them from impurities, or, in other words, to bring them into the condition in which he receives them. We shall, therefore, assume the iron-worker to be supplied with either pig or bar-iron, in bulk, sheet, or wire; and the gold or silversmith to be equally well provided with materials. The student who desires information on these preliminary processes may very readily obtain it from numerous authors, who have given special attention to the scientific aspect of the subject.

The first class of processes must obviously be the Formative,—those by which the raw material is converted into the object proposed; and the second the Decorative, or those by means of which surface enrichment may be added. In offering the following notices upon both groups of processes, we must be understood as purposely avoiding mechanical or economical considerations, and noticing only such leading principles of either actual, extinct, or dormant practice, as may seem most likely to conduce to an elevation of the treatment of the metals, and a knowledge of which may assist the designer, by giving him command over the means through which his conceptions can best and most readily be carried out, and through a subordination to which they can alone be made practical.

Almost infinitely as the working details may be varied, the Formative processes in all metal-working depend only upon five systems,—*Casting*, *beating cold*, *beating hot*, *electrotyping*, and *cutting away by abrasive tools*. The degree in which these various systems should preponderate in the treatment of each metal must, of course, depend upon its nature and properties. All may be wrought by casting, but iron, bronze, and brass most successfully. Gold and silver, from their superior ductility, may be most readily fashioned in sheets by *beating cold;* iron by *beating hot; electrotyping* affects the pure metals; and all, pure or alloyed, require in their finishing more or less *cutting away* of parts by *abrasive tools*.

Of these four systems, in the present day, *casting* is, perhaps, the most common and best understood; and as many very excellent accounts of the ordinary processes of sand-casting, more particularly of iron, have been already published, we have devoted but few lines to that portion of the subject.* We have, however, treated more copiously those less-known variations in the practice of casting, by means of which works of art of the highest class have been, and are now, constantly executed. With regard to the system of *beating cold*, by means of which the finest works which have been wrought in silver have been produced *en repoussé*, we have collected numerous illustrations of the practice of the best periods; and from having enjoyed opportunities of seeing the greatest technic artist of the present day, M. Vechte, work, we know that the traditions of Cellini are not effete, and that the modern art-workman has nothing to do but to follow his precepts and succeed. With regard to the system of *beating hot*—the province more especially of the blacksmith—we have said but little, as the art is one principally involving manual dexterity, and because the principles of its practice are so generally apprehended, and have been recently so well described in detail by Mr. Holtzappfel. So many excellent manuals have been published on the subject of *electrotyping*, that we have given only the skeleton, as it were, of the process. With regard to *cutting away* by *abrasive tools* it will be unnecessary to say much, as everything must depend upon the well-trained hand of the artificer, working in obedience to a knowledge of art, and a fine appreciation of the exact effects attainable by a graduated manipulation of the respective metals. Thus the skilful chaser may perceive that precise degree of refinement which might be admissible in silver, but which would be a *petitesse* in bronze; but it would be difficult for language to define tools and handling which should vary with every respective occasion.

It is to be regretted, that in the present day the Decorative processes of metal-working should be so much neglected in this country. Of the series we have enumerated scarcely one is now used; and we have, therefore, endeavoured to be more explicit in our descriptions of them,—hoping that thereby some of the great manufacturers may be led to inquire for themselves, and ultimately to avail themselves commercially of the experiences recorded in those palmy days, when exquisite metal-work, enamelled, parcel-gilt, or damascened, was looked upon as no less essential to the furnishing of a church or palace than the beautiful carving of the masonry, or the most elaborate interior decorations.

In our remarks on these Decorative Arts we have translated freely from Cellini, whose exquisite works form the best possible testimonial to the inestimable value of his precepts;† and, as a general principle, have endeavoured to go into detail upon the least-known points of the subject, abridging to the narrowest limits our notices of processes for the examination of which the student is surrounded by opportunities on every side.

* For a brief but most lucid description of the necessary arrangements of iron-casting, we would especially refer the reader to Mr. Holtzappfel's excellent work on "Turning and Mechanical Manipulation," Vol. I.

† We have even followed Cellini in his numerous digressions, since they are not only eminently characteristic of the man, but, in many cases, they help to elucidate the effects produced by the processes he describes.

FORMATIVE PROCESSES.

I.—IRON-WORKING.

Iron is usually worked into form by two operations: 1, by casting,—that is, reducing the metal to a fluid state by means of heat, and then pouring it into moulds, the cavities of which it fills, so as to constitute the counterpart of the model by which the form of the cavities has been determined; and, 2, by softening the metal by heat, and then beating it with hammers or punches into the requisite shape. In finishing up either cast or wrought-iron, files, chisels, gravers, and other cutting or abrasive tools, may, of course, be used.

The most convenient mode of making moulds for iron-casting, and that now universally employed, consists in selecting materials, the particles of which possess sufficient cohesion to retain their form, and which yet preserve, at the same time, sufficient openness of texture to allow of the free escape of the heated vapours and gases generated at the moment when the liquid metal comes in contact with the mould into which it is poured. Certain varieties of sand are found to best supply the requisites above indicated: as they vary, however, in different cases, the qualities of the sand may be considerably modified by the addition of materials possessing more or less cohesive power, such as loam, horse-dung, brick-dust, plaster, charcoal, &c. The simplest operation in the foundry consists in making up a bed of sand; pressing a wooden or metal pattern into it; removing the pattern, leaving an imprint of it in the sand; and running into the imprint liquid metal, which, on cooling, hardens, and retains the form of the pattern. In order to prevent the weight of the liquid metal displacing the bank of sand, it is necessary to confine the latter in a box. It must be obvious, that where one such box alone is employed the upper face of the casting can only be the level assumed by the liquid metal on running into the open mould. Where, therefore, the casting requires to have a precise form given it on both sides, two such boxes must be employed, the cavities in the one being secured over, and opposite to, those in the other, an aperture being made, so as to allow of pouring the metal in to fill up the hollow formed between them. The ordinary bullet-mould affords an illustration of the simplest form of moulding in two parts. Where the form of the pattern is complex several other boxes are frequently added, and the whole being securely bound together, the metal fills up the cavities formed by the impression of the pattern at their planes of contact. The adhesion of these planes is prevented by powdering them over with fine dry brickdust.

The notes on this subject contained in Mr. Holtzappfel's admirable work, "Turning and Mechanical Manipulation," Vol. I., are so perfectly clear, that we have ventured on a somewhat long quotation:—

"The perfection of castings depends much on the skill of the pattern-maker, who should thoroughly understand the practice of the moulder, or he is liable to make the patterns in such a manner that they cannot be used, or, at any rate, be well used.

"Straight-grained deal, pine, and mahogany, are the best woods for making patterns, as they stand the best: screws should be used in preference to nails, as alterations are then more easily made in the models; and glue joints, such as dovetails, tenons, and dowels, are also good, as regards the after use of the saw and plane for corrections and alterations.

"Foundry patterns should be always made a little taper in the parts which enter most deeply into the sand, in order to assist their removal from the same, when their purposes will not be materially interfered with by such tapering. The pattern-maker, therefore, works most of the thicknesses, and the sides or edges, both internal and external, a little out of parallel or square,—perhaps as much as about one-sixteenth to one-eighth of an inch in the foot, sometimes much more.

"When foundry patterns are exactly parallel, the friction of the sand against their sides is so great, when they penetrate deeply, that it requires considerable force to extract them, which violence tears down the sand, unless the patterns are much knocked about in the mould to enlarge the space around them. This rough usage frequently injures the patterns, and causes the castings to become irregularly larger than intended, and also defective in point of shape, from the mischief sustained by the moulds, all which evils are much lessened when the patterns are made consistently taper and very smooth.

"It must be distinctly and constantly borne in mind, that although patterns require all the methods, care, and skill of good joinery or cabinet-making, they must not, like such works, be made quite square and parallel, for the reasons stated. Sharp internal angles should, in general, be also avoided, as they leave a sharp edge or arris in the sand, which is liable to be broken down in the removal of the pattern, or to be washed down on the entry of the metal into the mould. Either the angle of the model should be filled with wood, wax, or putty, or the sharp edges of the sand should be chamfered off with the knife or trowel. Sharp internal angles are very injudicious in respect also to the strength of castings, as they seem to denote where they will be likely to break, and more resemble carpentry than good metallic construction.

"Before the patterns reach the founders' hands, all the glue that may have been used in their construction should be carefully scraped off, or it will adhere to and pull down the sand. The best way is to paint or varnish wooden patterns, so as to prevent them from absorbing moisture, as they will then hang to the sand much less, and will retain their forms much better. Whether painted or not, they deliver more freely from the mould when they are well brushed with black-lead, like a stove.

"In patterns made in the lathe exactly the same conditions are required: the parts which enter deeply into the sand should be neither exactly cylindrical nor plane surfaces, but either a little coned or rounded, as the case may be; and the internal angles should not be turned exactly to their ultimate form, but rather filed in, or rounded, to save the breaking down of the sharp edges of the mould.

"Foundry patterns are also made in metal: these are very excellent, as they are permanent; and, when very small, are less apt to be blown away by the bellows used for removing the loose sand and dust from the moulds. To preserve iron patterns from rusting, and to make them deliver more easily, they should be allowed to get slightly rusty, by lying one night on the damp sand; next they should be warmed sufficiently to melt bees'-wax, which is then rubbed all over them, and in great part removed, and then polished with a hard brush when cold. Wax is also used by the founder for stopping up any little holes in the wooden patterns: whitening is likewise employed, as a quicker, but less careful expedient; and very rough patterns are seared with a hot iron. The good workman, however, leaves no necessity for these corrections; and the perfection of the pattern is well repaid by the superior character of the castings.

"Metal patterns frequently require to have holes tapped into them for receiving screwed wires, by way of handles, for lifting them out of the sand; and, in like manner, large wooden patterns should have screwed metal plates let into them for the same purpose, or the founder is compelled to drive pointed wires into them to serve as handles, which is an injurious practice.

"It is invariably necessary to work patterns in some degree larger than the intended iron castings, to allow for the contraction in cooling, which equals from about the ninety-fifth to the ninety-eighth part of their length, or nearly one per cent. This allowance is very easily and correctly managed by the employment of a *contraction-rule*, which is made like a surveyor's rod, but one-eighth of an inch longer in every foot than ordinary standard measure. By the employment of such contraction-rules every portion of the pattern is made proportionably larger without any trouble of calculation.

"When a wood pattern is made from which an iron pattern is to be cast, the latter being intended to serve as the permanent foundry pattern, as there are two shrinkages to allow for, a *double* contraction-rule is employed, or one the length of which is one quarter of an inch in excess in every foot. These rules are particularly important in setting out alterations in or additions to existing machinery; the latter is measured with the common rule, and the new patterns are set out to the same nominal measures with a single or double contraction-rule, as the case may be, the three being made in some respects dissimilar to avoid confusion in their use. The entire neglect of contraction-rules incurs additional trouble and uncertainty."

When the pattern is laid in the "flask," or sand-box, the sand should be beaten in around it, so as to increase the cohesion of the mould, and to admit of its being moved about, reversed, and otherwise arranged, preparatory to the securing together of the boxes, and the admission of the metal between them.

Those only who are technically acquainted with the extreme difficulty attendant on the conditions of sand-casting, can realise the care and labour necessary to the production of any work of an elaborate character, since the slightest under-cutting of the pattern entails a great amount of labour in the preparation of what are called loose cores; that is to say, such portions of sand as would be pulled away in extracting an under-cut pattern from the box in which it had been laid to form an imprint. These are moulded in sand, and require to be adjusted with extreme delicacy, so as to allow the molten metal to run in, in order to produce exactly the requisite form. In large castings the various parts frequently have to be made separately, and adjusted together. The skill acquired by the fitters in concealing these junctions is very great; and it requires a practised eye to detect the existence of a well-finished joint. Considerable experience is required on the part of the designer, since provision must be made by him to ensure that the contraction of the metal while cooling shall proceed uniformly over the whole of the casting; since otherwise the portions which retain their heat longest would tear away from those which had set most quickly, and thus the work would be spoilt.

With regard to *wrought-iron*, a description of the ordinary processes of the blacksmith's art could but little interest or assist the artist, and the practice of rolling iron in various sections appertains rather to the civil-engineer than to the metal-worker. The subject, however, is so large in its application to architecture, and to structural purposes generally, and so novel and scarcely yet fully worked out in many of its bearings, that justice could not be done to it by a hasty notice. We, therefore, consider it wiser to refer the reader to specific treatises on the subject, such as that of Mr. Holtzappfel, rather than to afford imperfect information.

We have already referred to some peculiarities in the execution of ancient blacksmiths' work, and purpose explaining some of its further varieties in our description of the plates.

II.—CASTING IN BRONZE, AS PRACTISED IN THE PRESENT DAY.

The necessity in carrying on this art of a considerable capital, under the form of furnaces, apparatus, material, &c., as well as large accommodation in premises, has caused the practice of it to be transferred from the hands of artists (who formerly conducted the casting of their own works) into those of regular trade founders. These, from confining themselves altogether to the study of the economy of moulding and melting, have much improved upon the old system of working; but, unfortunately, their efforts to ally their excellent manipulation with the amount of artistic excellence required to bring their productions within the category of works of high art, have in too many cases been unattended with success. When a statue has to be cast by these founders it is moulded in the usual manner adopted for very large plain iron castings, sand and loam being used for the purpose; these answer well enough for all castings which are to be afterwards wrought by machinery, and in which soundness of texture is the greatest essential. In a work of art, however, perfection in the mould is the chief object, and is of the greatest importance, as after-cooling is never advantageous if carried beyond the mere necessities, which of course must always arise when objects are cast in numerous pieces. When, therefore, sand and loam are used in large works of art, from their not being fine enough to produce the requisite sharpness, nor sufficiently strong to bear without injury the building up of the core and the running of the metal, it becomes necessary for the moulder to make repairs, which are but too liable to destroy the form of the model, and necessitate a good deal of tooling, by which much of the precise form of the original is destroyed.

In making the moulds of the several pieces (for rarely can a statue be cast in one) much care is required in the arrangement of the ingates, or ducts, for the admission of the liquid metal, and the vents for the air thereby displaced. The practice is to introduce the metal into the lowest part of the mould by pouring it down from the upper part through ingates worked in the joints. The liquid metal thus gradually rising drives out the air from the mould through the vents provided for this purpose, and worked in the same manner as the ingates. Thus the space between the core and the mould, when the latter is removed, is exactly equivalent to the original model on which the mould had been previously made.

The use of the core is to avoid the excessive consumption of metal which would take place if it were allowed to fill the whole of the mould, and the manner of constructing it is as follows:—When the mould has been made, a layer of clay of the prescribed thickness of the metal is laid on the inside of it, and the remainder of the space filled up with the same material as the mould had been composed of; the mould having been taken to pieces, the clay removed, pieces of bronze inserted to keep the core in its place, and the mould again fitted up, a space is left which will eventually be occupied by the metal, provided the ingates and vents work properly. Should, however, the latter not convey away the displaced air, explosions will take place, by which not only will the cast and mould be spoilt, but serious and fatal accidents may probably take place.

The composition of the material of which the moulds and cores are constructed is of considerable importance, as it must not only be capable of retaining the impressions imparted to it, but must be able to resist the heat of the molten metal, and also to allow of the escape of the gas, which, being generated between the metal and the mould, would, if it could not pass through the latter, hinder the metal from lying close to its surfaces. The sand generally used answers perfectly well in the two last-named points, but its tenacity is not sufficiently great to enable it to hold together in moulding a statue. A composition has, therefore, been sought for, and that which is usually employed is a compound of equal portions of plaster-of-paris and brick-dust, worked together to the consistence of clay. In the use of the former tenacity is obtained, while the heat of the metal has no effect on the latter, nor do either of them impede the required passage of gas.

To allow the moving about of these moulds, it is customary to erect them on iron bases, and to place irons within them for the purpose of counteracting the fragility of the composition. When finished, iron hoops are placed about them, and they are moved by means of cranes into ovens, and there left for five or six weeks, according to their size, for the purpose of thoroughly drying them. Any damp would have the effect of impeding the running of the metal, through the bubbles which would arise on the contact of the hot metal with the moisture. Previously to the casting, it is necessary to sink the mould below the ground, pugging it in well with sand, and placing weights on its top to prevent any part being lifted up on the pouring in of the metal. All measures which will prevent expansion are resorted to, and lastly channels of sand are made from the mouth of the furnace, which, when all is ready, is tapped. The glowing metal flows rapidly out, finding its way through the channel and ingates into the mould; and when it appears again through the vents a good cast is presumed to have taken place: should, however, a burst of flame arise from the mould, it may be assumed to import that some failure has taken place: the metal is thrown in all directions to the danger of those in its vicinity; the cast, when examined, will be found to have a honey-combed appearance, and all the work will have to be recommenced, as the same mould will never serve again after such an occurrence. When a foundry is well supplied with all necessary conveniences, and due care is observed, these failures rarely occur: they are usually the result either of negligence or inadequate means.

Various are the formulæ for the compositions of bronze. The late Mr. Maudslay, who was a competent authority, stated that, for the casting of figures, no better proportion could be used than 91 of copper to 9 of tin; an opinion which subsequent trials have fully substantiated. Zinc is often added to the alloy when in a molten state, as it has the effect of rendering the flow of the metal more free. More than 1½ per cent, however, must not be employed, as, being subject to the action of acids, the surface of the figure would be liable to suffer in its durability. When the cast comes from the mould, or rather when the mould is removed from the cast, as the former as well as the core are reduced in the casting to a state of dust, projections will appear where the metal has run into the ingates and vents; these runners, as they are called, and also the projections resulting from the junctions of the mould, must be cut off, and the chasing tools employed to correct any imperfections which may have occurred. When there is a green coating on the metal it is considered the sign of a good surface beneath; to arrive at this, emery and water must be employed, which will have the effect of removing the green scurf. The figure, having been cast in pieces, it now only remains to fit them together; they are first joined to each other with bolts, and then the joints are filled with molten metal, the parts having been previously embedded in sand, leaving merely the joint exposed. Six or seven inches only are thus soldered at a time, and the thin lines of metal resulting from this operation are removed as before. This process having been properly completed throughout all the junctions, the figure will be rendered as solid as though cast all in one piece, nor will the junctions be visible.

An artificial colour is occasionally given to the bronze by subjecting it to the action of acids; but if it be erected in its natural colour the weather will soon produce that appearance which is sought to be effected by such artificial means.

III.—CASTING IN BRONZE, AS PRACTISED IN THE TIME OF CELLINI.

(SIXTEENTH CENTURY.)

When we inquire into the processes by which the fine bronze statues of the Cinque-cento period were produced we naturally recur to Cellini, who has left us such admirable descriptions of his practice. He tells us, that a model of the intended figure, prepared in brick-dust and plaster, mixed to the consistence of clay, of dimensions a little smaller than the real size, is placed on a grating in a deep pit, and thoroughly dried by lighting a fire beneath it. It is then covered over with sheets of modelling wax, of the exact *substance* which it is intended that the cast bronze shall exhibit, and perfectly finished up with modelling tools to the exact *surface* of the contemplated bronze statue. To this coating a number of sticks of wax are attached, all turning upwards, in order to serve as vents for the escape of the air, which must be forced out of the lower cavities of the figure on the admission of the metal to the mould; and which, if not allowed to escape, would obviously prevent the perfect filling up of the extremities. Another series of wax pipes is also arranged, attached to different parts of the figure, and also to the main channel along which the molten metal is destined to pass, the object of which is to facilitate the speedy transmission of the bronze to all parts of the figure. According to the difficulty of the subject, a greater or less number of rods and pegs of bronze are then driven through the wax into the core, and are allowed to project sufficiently to tail into the outer mould, and thus serve, when the wax shall be withdrawn, to steady everything. The whole of the waxwork is then brushed over with a mixture of clay and old white crucibles, mixed to a state of cream, and is gradually coated over to some thickness; to this succeed layers of earth, clay, and different ingredients, the last coating being bound round with iron ties, &c., in order to make the mould sufficiently strong to

contain and support the great extra weight of the molten metal. The mould is then dried, and fire being made underneath and around it, the whole is baked together; the wax is of course liquefied by the heat, and is allowed to run off through channels made for its escape, leaving, therefore, a vacant space between the outer and inner moulds. The channels being filled up with fire-clay, the bronze is melted in a furnace, the bottom of which is slightly higher than the top of the statue; and when the bronze is perfectly liquefied it is "tapped,"—that is, allowed to run into the conduit which conveys it to the figure. From hence it rushes into the space formerly occupied by the wax, driving the air and gases evolved up the funnels provided for their escape. After the mould is perfectly filled it is allowed to cool, and then the outer casing is broken up, the core, as far as possible, removed, any imperfections in the casting repaired, and all the delicate details worked up, chased, matted, punched, or burnished, at the discretion of the artist. In very large works a different process is adopted: what is called a piece-mould, or moveable mould,—*à bon creux*, as the French term it, is formed on the finished clay or plaster statue; each piece of this mould is then lined with sheet-clay, and put together; it is then filled up with coring stuff, from which, as soon as it is sufficiently set, the external mould is taken away bit by bit. The sheet-clay is then removed from each piece separately, and the mould *à bon creux* is built up over the core, leaving, of course, an interstice between the inner and outer moulds, equal to the thickness of the sheet-clay. Provision being made for the admission of the metal, for the escape of the air and gases, and for the stability of both the moulds, by passing iron rods and ties in all directions, the casting is effected in an exactly similar mode to that already described. It is usual, in all small objects, to give a factitious colour to the bronze, by first heating and then immersing it in different liquids, technically termed pickles.

IV.—ORNAMENTAL BRASS-WORK.

On inquiring into the processes by which objects of this description are produced, we find that when the design is drawn a model is made in wax; from which, when coated with lac-varnish, to harden its surface and prevent the adhesion of the sand of which the mould is made, a cast is taken in lead. The imperfections common to early impressions having been removed by the "repairer" with his small gravers and chisels, a cast is taken in brass, which the "chaser," with his "mats," "punches," "stipple-tools," and "riffles," speedily corrects and reduces to a perfect representation of what is required, and this completes the permanent "model" or "pattern," from which thousands of fac-similes may be made. Simple forms are easily moulded, and leave the sand freely; but where concavities, or under-cuttings, are introduced, much skill and patience are needed. To copy a purely spherical model, the mould requires to be of two halves only, but in complex designs the mould is composed of many parts, and the time expended in making it occupies several days. It is in the judicious discrimination as to the fewest number of pieces and the arrangement of the several "hanging cores," that the evidence of ability on the part of the moulder is chiefly shown. To make the sand which forms the mould more adhesive, it is pounded in a mortar, and its facilities for receiving the impression of minute details are increased by dusting over the surface with powdered loam and ground charcoal. In order to withdraw the original pattern the several parts of the sand-mould are lifted out, by means of small points of wire, and after their removal the pattern is taken out and the cores are replaced; provision being made, by what are termed "ingates," for the introduction of the fluid metal, which is melted in Stourbridge-clay crucibles, in an air-furnace, with a clear coke fire. The moulds being closed and held together by wood clamps, the crucible and its contents are removed from the furnace, and the metal poured into the "ingate" or aperture of the mould, in order to fill up the space left by the withdrawal of the pattern, and to produce an accurate copy of the original model.

The surface of a brass casting just removed from its matrix presents an appearance and colour closely resembling copper, whilst any roughness or superfluous metal indicates imperfection in the mould, to remove which, when the forms are simple, the file and turning-lathe will generally suffice. When a careful degree of finish is needed the work requires to be "chased" up. When the surface to be cleansed is of a "matted" kind, the aid of acid is called in, by immersion in which a uniform brilliant or a dead-gold appearance is secured. It is in this particular that modern brass-foundry differs from that executed by the skilful artisans of the middle ages, who produced a finished surface by friction or by gilding, through the medium of the mercurial amalgam. In acid finish, attention must be paid to the entire removal of grease, and a preliminary cleansing is absolutely necessary. For the final operation, the acid requires to be completely neutralised, otherwise the action will continue and the surface be destroyed. The dead-gold appearance of much of the modern brass-work was the result of a discovery, which arose out of the accidental circumstance of a piece of work having been left in the acid during the night. This hint was adopted, acted on, and successfully produced the desired effect.

The majority of the brass-work produced on the Continent is still gilt, but the gilding can be closely imitated if some little care is taken in the composition of the metal, and if friction with a "scratch-brush" be applied after dipping. The burnished portions in brass-finishing are produced by steel-burnishers, a little ox-gall being applied to prevent scratching, During this last process, the objects are kept wet from time to time, by immersion in water and argol. After being "dried out" in boxwood-sawdust they are protected from oxidation by a coating of lacquer, composed of spirits of wine, and coloured with a vegetable matter. The article to be lacquered is heated, and the lacquer applied with a camel-hair pencil.

In those objects produced from plates by pressure, the metal is prepared by being rolled into a thin sheet. The "dies" are formed of cast-iron or steel, but more commonly of the latter material: into these dies the design to be copied in relief is cut or sunk. The impressions are taken by means of a stamp-press, to the falling hammer of which the die, sunk in intaglio as described, and technically called "a force," is attached. Annealing follows each blow, and the forces are so changed as to gradually increase in convexity, so that the highest relief and the minutest details may be brought up. The finish applied is the same as that described in connexion with cast brass-work. Of late years both plain and coloured glass have been introduced to a great extent, in combination with brass, and with such success, that upwards of 22,000 pairs of cornice-ends and curtain-holders, into which the improvement has been introduced, have been sold, within the few years which have elapsed since the taking out of the patent, by Messrs. Winfield of Birmingham.

V.—GOLDSMITHS' WORK.

To work gold with facility, it is requisite to combine with it a small portion of some of the inferior metals, and, in order to effect this combination with certainty as to the result, it is necessary first to obtain the gold in the highest possible state of refinement. This is effected, first, by the process known as cupellation; that is, melting the gold in a crucible possessing the power of absorbing metallic scoriæ in a liquid state; and, secondly, by "partition;" that is, exposing very small flakes of gold to the action of hot diluted nitric acid, which, combining with any silver that may be present, and not acting on the gold, leaves the latter quite pure. It is occasionally necessary, in order to excite the action of the acid on an excessively minute admixture of silver, to add a superabundance of the latter metal, in the ratio of three to one, which, on lamination and immersion, ensures the exposure of the whole of the gold to the action of the acid. This process is known as that of "quotation." The gold thus purified is mixed with alloys varying according to the destination of the metal, and cast into massive ingots. It may be scarcely necessary to advert to the antiquity of the art of the purification of metals: such passages from the Old Testament as "He is like a refiner's furnace," "He shall sit as a refiner," "I have refined thee, but not for silver," "the fining-pot is for silver, and the furnace for gold," will no doubt readily suggest themselves.

We have been thus particular in describing the refinement of gold, as an analogous mode of treatment serves as the basis for the reduction of all other metals from the intractable to the tractable condition. The process of casting is but rarely made use of in the manufacture of either plate or jewellery, since it involves the concealment of a quantity of metal which would produce infinitely more effect if extended by the action of the hammer. Gold is, therefore, usually reduced to the state of sheet or wire previously to being used; to the former condition by beating or rolling, to the latter by what is called "drawing." Rolling is effected by passing the massive gold between several rollers, the peripheries of which are so arranged as to approach each other more closely in regular series; and "drawing," by forcing solid cubes of metals through apertures, gradually diminishing in diameter, pierced in harder substances than themselves respectively. In this manner gold-sheet and gold-wire are produced, and a similar mode of operation will reduce almost any other metal to analogous conditions. When the rolling process is applied to lead, it is termed "milling."

Thus prepared, either in sheet or wire, of slight substance, or excessively thin and delicate, the gold is ready for the goldsmith or jeweller, who commences beating or twisting it into form, according to the nature of the object he would produce. Should he desire to execute embossed work upon it, he first, with a dry point, traces the subject he wishes to represent: then he beats it up, at first with a metal, but subsequently with a wooden hammer, into an approximative form, taking care not to reduce the thickness of the plate too much; he then proceeds to back up the concave side with a composition of pitch, wax, and brick-dust melted together (a substance so tough as to be called by the mediæval writers "tenax"), and upon the surface of the gold, thus equally supported, he continues to beat and punch until the desired relief and form are attained; then with files, delicate chisels, gravers, and burnishers, he concludes by chasing up the more delicate details, and gets rid of the "tenax" by heating it, until it runs out in a fluid state. In executing large or complex pieces of plate it is usual to work all the principal constituent portions separately, taking care to subdivide the design in such a manner that the lines of junction shall, as far as possible, be hidden from observation, and then to unite the several pieces by solder. The theory of soldering once explained will doubtless suggest the different variations requisite to be adopted in the process. Solder is an alloy of certain metals fusible at a lower temperature than those which require junction. In order to secure perfect tenacity it is desirable that this difference of hardness and fusibility should be as small as possible: and hence the practice has arisen of combining with the solder (in a state of fine powder) certain salts and resins which possess the property of assisting the fusion of the pellicle of metal which they cover, and consequently producing adhesion and incorporation of surface without necessitating the liquefaction of the whole mass of solder. Borax, sal-ammoniac, and common resin, are the most frequently employed of any of these substances. Among workmen, two modes of thus uniting metals are recognised, the one known as hard, the other as soft soldering. The former involves the exposure of the whole object to intense heat in the furnace, or to the action of the blow-pipe; the latter is effected by melting lead, tin, and resin together when brought in contact with a heated iron. It is evident that the system of hard soldering must necessarily be so arranged, prior to the commencement of the elaboration of any piece of plate, as to ensure that all the soldering may as far as possible be executed at one time, since, without an extraordinary degree of nicety and attention, exposure to the furnace a second time would undo all that might have been effected at the first operation. Great care must also be taken in any subsequent heating, for the purposes of colouring the gold, &c., that the temperature of the fire shall not be raised above that degree at which the soldered joints would liquefy and become disunited. Without the power of soldering, it would be an impossibility to execute any elaborate work in filigree or torsion of wire; modes of combination peculiarly appropriate to the design of jewellery in gold, in consequence of the extraordinary pliability of the metal.

This property of extreme toughness peculiarly adapts gold to the operation of stamping,—a mechanical process which materially assists in economising labour, and in reducing the prices of all articles of bijouterie produced through its adoption. It is thus performed:—An approved design is countersunk, or engraved in intaglio, after the manner of gem-cutting, upon a steel die. This, which is called the "matrix," is struck, by a press similar to that used in coining, into a cube of soft iron, which of course presents the design in relief instead of intaglio; this soft iron die being tempered into hard steel, is then impressed in another cube of soft iron, and thus a second edition of the matrix is obtained. From this second "matrix" as many more dies as may be necessary are obtained by a repetition of the same process, without any risk of injury to the original intaglio. On one or any number of these steel dies, a thin sheet of gold is extended, upon which is placed a thicker sheet of lead. On beating this lead with a hammer, the percussion gradually drives the sheet of gold into the indented form of the steel dies, and, on finally removing the gold, it will be found perfectly adapted to the intaglio into which it has been forced. It is in this way that a large quantity of cheap jewellery is fabricated annually in this and in other countries. In consequence of the cost of the steel dies, they can, however, only be employed by the manufacturer in small patterns, adapted for the most general and wholesale circulation.

All gold articles, when finished as far as their formation is concerned, require the superficial graces of colouring, matting, burnishing, polishing, &c. "To gild refined gold" is not altogether such a paradox as might be supposed, since the purer the gold

the more colouring does it require to give it the splendid deep tint that we so much admire. The process is thus effected:—A paste is made of equal parts of verdigris and sal-ammoniac, to which is added one-twentieth part of nitre and a little white vinegar; this paste is spread with a brush over all those portions of the gold proposed to be coloured, to about the thickness of a knife blade, and the piece of plate is then exposed to the fire: as soon as the verdigris seems consumed, the vessel is plunged, still quite hot, into a bath of cold water impregnated with some alkali. In this manner a slight coating of copper is given to the gold, which infinitely enhances its beauty. A matted surface is obtained by delicately tapping all the parts requiring a dead surface, either with a broken or unbroken punch. Burnishing consists in rubbing with a steel or agate burnisher, and is most effectively applied to what may be termed the high lights of the metal-work. General polishing is effected by friction with powders of different degrees of granulation, so as to substitute one series of microscopic scratches for another, until the last become utterly unappreciable by the naked eye, and a brilliant lustre is the consequence.

VI.—SILVERSMITHS' WORK, AS PRACTISED IN THE PRESENT DAY.

The design of a piece of plate of an elaborate description having been drawn, the modeller proceeds to embody it in wax, finishing every portion of it with a degree of precision equal to that which is requisite for the finished object. Assuming that the body of the work is to be formed in what is called *repoussé*, or beaten-up work, a sheet of silver is cut into the form of the object when developed upon a plane surface, and rudely beaten into a hollow, or dish form, by wooden mallets. The requisite degree of concavity having been given to it by hammering, ornaments in basso or alto-relievo are obtained by applying the internal surface to an iron rod, which is made to vibrate by the frequent blows of a hammer on the end of the iron farthest removed from that in contact with the silver. The continued action of these vibrations, regulated by the skill of the workman, gradually gives the requisite form to the ornament. The rough developement of minute projections is obtained by more pointed irons of a similar description. In order to define more perfectly the form of these projections, the silver vessel is filled with a composition of pitch and ashes, so that blows with punches of various sizes may be applied to any part of its exterior without injury to the general form. When by this counteraction the relief of the ornament is modelled up, the finishing touches and fine edges are given by means of chasing with the graver. The pitch is melted out, and that portion of the piece of plate is ready for the subsequent processes of cleaning, polishing, &c.

Where certain portions of the object require to be cast, the moulder takes a mould in intaglio from the original wax model. Into this mould he lays portions of sheet clay, answering in substance to the desired thickness of metal. By pouring in liquid plaster at the back of the clay a core is obtained, on the hardening of which the sheet clay is removed, and melted wax is poured in between the two plaster-moulds to take its place. The small piece of wax thus cast is made to serve as a pattern for the final casting in sand-moulds, the silver being run into the two halves of the mould, so as to fill up the space originally occupied by the wax which was removed to make way for the metal. When the requisite number of these small pieces are cast, and their edges trimmed up, they are neatly fitted one to another. Solder is placed between them, they are connected together by wires, and by the action of a gas blow-pipe upon the solder-joints the whole are united. The patience and dexterity required for forming an elaborate piece of work, consisting frequently of from thirty to forty or even more of these small castings, may be readily conceived. As an illustration of the extreme difficulty this subdivision of parts involves, it may be noticed that in the formation of the great candelabrum contributed to the Exhibition of 1851 by Messrs. Hunt and Roskell, there were at one time no fewer than six hundred fragments distributed throughout their workshops, the whole requiring to be adjusted and brought together in the manner described, so as to make up the whole object.

In order to abridge the labour consequent upon the formation of frequently-recurring patterns, stamping, by means of steel dies, is often resorted to. These dies, or forces, are engraved in intaglio, and brought down with a heavy pressure upon sheets of metal placed beneath them, in a manner similar to that we have described as necessary for the formation of brass die-work and gold-stamping. In open silver-work the perforations are cut out by hand, but in commoner work by means of steel dies prepared for the purpose.

When the article is completely put together, all the imperfections are removed by riffles and other tools. Every part is carefully chased, so as to give the utmost precision to the ornaments and variety of texture to the different portions. The whole is then cleaned down and polished by a succession of rapidly-revolving brushes, in connexion with which various substances, of a greater or less degree of fineness, are successively employed, until the scratches at first produced by the operation become imperceptible. In those parts in which a dull finish is desired, the effect is obtained by the application of a small metallic brush; and where, on the contrary, extreme brilliancy is required, that result is produced by rubbing the parts with burnishers of steel or bloodstone. A white frosted appearance, or "dead finish," is obtained by covering parts of the object with a coat of pulverised charcoal and saltpetre, or argol, bringing it to a red-heat over a charcoal fire, and finally quenching it in a pickle of sal enixon.

The employment of dies has been carried to so great an extent that many ordinary objects—such as spoons, forks, &c.—can be formed out of sheet-metal at a single blow.

VII.—SILVERSMITHS' WORK, AS PRACTISED IN THE TIME OF THEOPHILUS.

(TWELFTH CENTURY.)

The picture of the method of working the precious metals during the Middle Ages afforded in the writings of Theophilus* is so perfect, that, although it enters into somewhat prolix detail, we have determined on printing his description of making the "large chalice" intact. "If you wish," says he, "to construct a large silver chalice of four, or six, or ten marks, you will first purify and prove all the silver in the fire; afterwards divide it in the order before described.† After this take two pieces of iron,

* We are glad here to be enabled to express our deep gratitude to Mr. Hendrie for bringing this author so prominently before the public, and for enriching his translation with such copious and admirable notes.

† See Theophilus, book iii. chap. 24–26.

equally long and wide, of the measure of a palm and thick as a straw, evenly beaten and without flaw, and carefully smoothed with a plane; make between these an iron binding, beaten smoothly and moderately thick, which you will bend in fashion of a circle, of such size as it may be apparent to you that it can be filled with the silver you wish to cast in it. And when you have bent it do not join the ends together, but you will separate them a little, that an opening may appear through which you can pour in. You will adapt this circle equally between the two iron (plates), so that its ends may appear a little beyond the irons, and bind these with three strong iron hooks in three places, namely, below and on each side near the opening, and thus plaster beaten clay around the circle, between the irons, and abundantly about the opening. When this mould has become dry you warm it, and pour in the melted silver. All gold and silver which is founded in this manner is always sound (unless it happen through great negligence) for working in it whatever you may wish. You will measure the circles, also, according to the quantity which you wish to found, and you make larger and smaller: after you have beaten out the melted silver as above, fill it with wax, and beat it on the body, if you wish to have ribs flat or round; these stand around like small spoons, both which kinds of work give great ornament to the chalice.

"If you wish to ornament which ribs with niello take heed of this, that the silver be thicker, and so act that one rib may be gilt and the other blackened: it is always necessary that they should be in pairs. When you have beaten out these, file them evenly, and portray Greek foliage in those places which you wish to make black, and carve with a bold stroke, and sculpture their grounds with graceful circles and with fine work.

"*On applying the Gems and Pearls.**—Afterwards cut these in pieces, like straps, so that every band may have a wire, which you will bend together, and make small settings of them, by which the stones may be enclosed, large and small, to the size of each one, and you will arrange them in their places. You will also have flour of wheat or rye, which you will mix with water in a small cup and place over the coals, that it may become a little warm. In this you dip these settings slightly, one by one, each in the lower part, and so fix them in their place. All being made fast, place the piece of gold upon which you have fastened them over the coals, until the moisture of the flour is dried, and they will soon adhere. Take also the fine wire and beat it slightly upon the anvil, so that it may be rather thin, and yet that the beads above and below may not project nor lose their form; with them you will weave flowers, large and small, with which you will fill up all the grounds between the settings. When you have formed these with the fine pincers, dip them into the wet flour, and you will thus put each into its place. Which being done, place it over the coals that it may become dry, and immediately anoint the soldering, and solder it as above. Both pieces of one handle being soldered and made firm, join them together, and place a foundation to them around them near their inner edge,—namely, a thin piece of gold, which may be like a straw, and smooth everywhere. When you have joined which piece between the two, bend three small thin pieces of iron, and make small stays, which can hold the outer pieces of gold in three places outside, so that the third, which compasses the inside near the edge, cannot be disunited. This being done, anoint the solder everywhere, and you will dry it a little over the fire, and the coals being arranged and glowing, you make a hollow among them, in which you place the handle, and about this you will arrange the coals in order, so that they may not touch the gold, but rise around it like a wall, until they dominate the gold; and you will then place above it two or three slight pieces of iron, which may pass across. Over this you will place the coals everywhere, and cover it carefully—so, however, that some openings may remain among these coals, through which you can see how the solder flows. When you see which, instantly sprinkle it with a little water: you take it out, and will gently wash and dry it, and, carefully considering it, if there is any fault you correct it, and again anointing it as before, you will solder it; and do this until it is made firm everywhere. In this manner you will make the other handle, and solder it. Which being accomplished, join them both to the cup of the chalice in their places, and make two lines upon the cup itself with a graver, by means of which you can see whether they are placed straight in soldering. Then melt pure gold, and mix with it a third part of red and pure copper, which, likewise fused and slightly beaten, you will file altogether and place in a goose-quill. After this accumulate before the furnace a great heap of coals, and place in them the cup of the chalice, so that half of it may be altogether under the coals, and that part upon which a part of the handle is to be placed may altogether rise above them; you immediately join which (handle) on to it, and anoint the vase with the handle, inside and out, with the soldering, and you will scatter the filings which you had placed in the quill inside and out with the solder, about the junction by which the handle is united to the cup; and thus, fire being placed around, you will heap the coals in a circle, as you did before about the handle, and place the irons over it, which you cover plentifully with coals. In the front part, within the hollow of the cup, place the coals in the shape of a small furnace, so that the coals may lie thickly around the circumference, and that a small opening may appear in the midst, through which it can be blown, that the heat above and below may be equal. And when you see the solder flow about, and as if undulating, a third time, sprinkle it carefully with a little water, and, taking it out, wash and dry it, and again solder it similarly, and until it adhere very firmly. And, turning the vase on the other side, join and solder the fellow-handle in the same manner."

VIII.—CELLINI'S METHOD OF MAKING LARGE SILVER VESSELS BY REPOUSSE, AND VARIOUS PROCESSES OF CASTING.

The following description is closely translated from the twelfth chapter of the celebrated Treatise on Goldsmiths' Work, by the great Florentine:—

"The silver having been cast in iron plates should be left to cool, as they thereby become harder and more solid. When cold, the dross should be removed from their surfaces. A razor somewhat blunted, and two-and-a-half fingers wide, should now be provided and fixed upon a stick, which should have in the form of a cross two handles, these latter being about a half braccio (one foot English) from the point of the razor, which should be bent about three fingers, and prepared so as to scratch; for with this razor the plates of gold or silver (as the case may be) will have to be scraped in the following manner:—The plate must be heated till red as the fire, and thus hot placed on the sheet of iron used for its casting, to which it must be nailed. The

* Theophilus, book iii. chap. 53.

stick on which the razor is fixed being placed against the workman's shoulder, with both his hands on the handles (forming the cross), he should scrape forcibly on the sheet till the surface of the silver appears and becomes clean.

"I will in this place mention some things I observed when working in Paris, where I executed works of the greatest difficulty, and of the largest size possible, in massive plate-work. While I was scraping some silver sheet in the above described manner, a workman of mine, a Fleming, named Claude, a very ingenious and able young man, observed to me, that although my method of scraping the plates was very excellent, still in the way in which he was accustomed to work them, both the time and the scraping were saved. Hearing this, I said I should be glad to learn his method, and thereupon I gave into his hands a pair of silver vases weighing about twenty pounds each, for him to execute, following however my models. When he had melted and cast his silver, and cleaned off the dross, he began beating the plate without scraping it, and gave it its proper form, as we shall describe further on; thus did he save the labour of the scraping, a plan worthy I think of imitation. Many other excellent methods did I also learn there, which I at first thought were in consequence of their working in excessively fine silver, but I afterwards found that it resulted from their great skill in this art; for I saw that all the inferior alloys of silver were finished with the same facility and perfection as were observable in works of real silver. Thus did they work without spending any time in scraping the plate, not failing, however, to remove, as they showed themselves, any flakes which the plates might from time to time throw up. Notwithstanding all these advantages, on reflection, I should prefer the first to the second method, that is to say, the scraping system, for the reason that I have found it better.

"I will now describe the way of making a vase of an egg-shaped form. Amongst the number which I had to make in Rome there were two of this shape, more than a braccio (about two feet English) in height, with their handles and with mouths contracted at the top; they were also wrought with foliage and diverse animals: one of them was for the Bishop of Salamanca, and the other for Cardinal Cibo. Vases of this sort are called ewers, and are placed upon buffets for the purpose of display. All the numerous vases I made for King Francis, which were much larger than the above, and on which I wrought with much care several chased works, I executed after the same method. When I had cleaned the plate of its dross and cut off the corners, I scraped it on both sides in the manner I have before described; and as it happens that the plates are cast longer one way than the other, by using the hammer I brought them into a round form; and when the plate had been heated to a red heat (not too much so, however, or it might split), I placed it on the anvil and beat it with the point of the hammer sharply from one angle to the other, driving the point well into the metal. I continued thus hammering from all four corners, till the lines of hammering crossed each other, and then also with the point of the hammer I worked towards the sides: after so beating and heating it four times, I succeeded in making it round. Having determined the measure of how wide the body of the vase was intended to be, I worked the plate to three fingers more than that width, always observing to keep the plate as thick in the middle as possible; before, however, this size is obtained by hammering, the centre should be determined as follows:—Place upright on an anvil a pointed iron tool, one finger thick and six long, not sharp but blunt-pointed; on this the plate must be balanced till it is quite straight and even, and when so, let an intelligent boy give a blow with the face of the hammer directly on the part over the point, so as to mark it on the plate. Many workmen are able to do this without any help, particularly with small plates, but in the larger ones it cannot be dispensed with. The plate should then be turned over upon the anvil, and using a hammer upon the iron point, the mark should be made stronger; a pair of compasses being now applied, using this mark as a centre, as they are turned round, the inequalities of the plate will become apparent; and by continually re-heating and re-hammering, the silver will be transferred to those places where it may be wanting, being very careful, however, not to lose the point of the centre. The plate having been worked to a size of three fingers larger than the body of the vase is intended to be, the compasses should be again applied, and besides the circle we have mentioned, several others should be made, about a finger's width from each other, until they come up to the centre. A sort of hammers must be now used, the heads of which are a finger thick in the points and a finger and a half on the other face; the points should have the corners rounded off, and shaped as is the fleshy point of a finger; with these the plate should be beaten, commencing from the middle, that is to say, the actual centre, being careful not to lose the mark, renewing it by striking with the same point we previously described in marking it in the first instance; and working with the hammer in a spiral manner round the marks and circles made by the compasses, heating the plate continually. Beating it in this manner, the silver will spread out in the form of a cup, such as the body of the vase requires. Having been careful to keep the point of the middle, the silver must be hammered out equally, for, should it hang more on one side than the other, the silver would be unequally distributed and the work would be ugly. Beat thus the plate, till it becomes as deep as the body of the model is high, and then, using various anvils suitable to the form of the vase, and striking with either the face or the point of the hammer, and sometimes without placing it on the anvil, the beating should be continued till the plate has taken the entire form of the vase; the name given to these anvils is cow's tongue (*lingua di vacca*). The rim or projection should be levelled at this time, as it determines the proportion of the body of the vase; this is done upon a sort of bent anvil made for this purpose. The beating should be commenced by degrees, holding it in the most advantageous way for facilitating the contraction of the neck, always being careful to remove any flakes which may, as the work proceeds, make their appearance. When, then, the neck has been contracted and formed according to the model, if basso-relievo have to be introduced into the body of the vase, it should be filled with black pitch, and should be set out and drawn upon with a burnished steel graver; either figures, foliage, or animals, being the subjects, according as the artists may desire to ornament it. The whole should afterwards be carefully redrawn with a pen and ink, with all that neatness and skill which is looked for in good drawing, after which the punches are to be used. These are iron tools of the length of a finger and large as a goose-quill, increasing up to the size of two quills, and are arranged in various shapes. Some of them are made like the letter C, beginning with the size of a small c, and increasing up to that of a large one. Some are much twisted, others less so, &c., till at last they come to be quite straight. These last, in diminishing, should finish with being the size of a man's thumb-nail, the diminutions extending to the number of six. These punches, being applied to the work, should be skilfully struck with a hammer of the weight of three or four ounces, thus by their means profiling all that had been drawn. When this has been done, the vase should be surrounded with a slow fire, for the purpose of removing the pitch which had been put within it, and then it should be boiled in a mixture of tartar and salt, in equal quantities, as has been already described.

"Another description of iron tools is now to be used; these are called snarling-irons, and are a sort of anvil with long horns, made of pure iron, long or short as may be wanted; they require to be fixed in a block, as is customary with other anvils.

One of the horns is placed within the vase, with the point (which should be rounded in the form of the little finger of the hand) turned upwards; this horn of the snarling-iron will cause that part of the work of the vase against which it is placed to rise as may be desired, by striking with the hammer the other horn, making the former one, which is in the vase, to vibrate upon the silver, and so bulge it out as much as may be wished. Having thus raised all the figures, animals, or foliage which had been designed, the vase should be re-heated and whitened as before mentioned, and then be replaced in the pitch and worked with other chisels made as above; except that their ends should be of the form of beans, and diminishing from large to small. It is true that other shapes than these are used, according to the customs of the artificers, for various are the methods I have seen adopted by masters of this art. This, however, is of little importance; it is sufficient to say that the tools are required to bulge and not to cut the silver.

"To return, however, to our description, the work should be again removed from the pitch, and re-heated; this should be repeated two or three times, as may be required. When the figures, &c. are brought nearly to the last finishing, remove the vase from the pitch, and work with wax upon the mouth and handle of it various elegant and fanciful devices, improving them from the first-made model; when these ornaments have been completed in the wax they should be moulded. The methods of doing this are various: some of them we think important to be described for the benefit of the artificer.

"I will begin, then, with that which I consider the easiest, and which I adopted in working the vases for King Francis. I first took some of the earth used by the casters of cannon, which being dried I sifted well, and then mixed with it some shearings of fine cloth, and a little cow-dung passed through a sieve; all of which I beat carefully together. I then ground some tripoly, and having made it as liquid as a painter's colour, I laid it upon the wax modelling, (to which I had added in the same wax all the ingates and vents required in casting; placing, as was my custom, all the vents below, and bringing them up to the ingates above, being careful in casting to keep these vents so far away from the ingates that the silver may not run into them, and so prevent their acting properly,) and having laid on one coat only of this ground tripoly, I left it to dry, and afterwards I laid over it a quantity of the mixture of earth, &c., as much as would, when dry, be of the thickness of a finger; this also I left to dry, and then I bound the work round with iron wire, upon which again I laid more of the mixture, but not so thickly as before: the purpose of this is that it may hold the portion laid first more tightly. The whole should now be brought close to the fire, keeping the mouth of the wax downwards over a basin; and by exposing it to a temperate fire, the wax will by degrees run out. Care should be taken not to make the heat too great, for should the wax boil in the mould the latter would be spoilt. The wax having been withdrawn, the mould will separate of itself from the vase. Thus the wax being removed, that part which was attached to the vase should be well closed with the mixture, and tied up in various places with fine iron wire; adding again some more of the mixture until the wire is no longer visible; and then the whole should be placed to bake in a brick furnace supplied with charcoal, the latter being fired at the same time that the mould is placed within. With this species of earth the whole heat of the fire may be applied at once, which cannot be done with other earths not mixed and compounded as is the one in question. When the mould is well baked, and whilst the silver is melting, place it within an earthenware pot capable of easily receiving it, and fill up the unoccupied space with sand, not wet; but somewhat damp; this will bind the mould in the same way as is done with those of cannon placed in trenches. When the silver is melted, cool it with some well-pounded tartar, and have ready a piece of linen cloth folded in three or four folds, well saturated with oil or grease, to place over the mouth of the crucible; then take up the crucible with the pincers, and pour the melted silver into the mould. The workman should have several sizes of these pincers, large, medium, and small, according to the quality of the different crucibles, and to the quantity of silver required to be melted; for they are useful in binding the crucible together, so that it may not break, a danger to which the artificer is much subject; for it often happens, that, in beginning to pour in the silver, when a small quantity has gone in, the crucible cracks, and all the labour of the workman is destroyed in a moment. Let the artificer then in this process exercise his greatest skill and care; and whilst he is filling the mould let him direct an assistant to hold with a pair of tongs the piece of linen cloth, so that it may not fall from the mouth of the crucible; for by retaining it there the silver is kept hot, and, moreover, it prevents any bit of coal or other matter falling into the mould.

"It sometimes happens that there are on the vase some little masks, as is indeed customary. When the wax has been detached from the vase, the moulds of these masks should be taken, and in the hollow a layer of wax, of the thickness of a thin knife-blade, more or less, should be laid, in substance according to the required solidity of silver; taking care that it be equally distended: this wax, on account of its equality and thinness, is called 'la lasagna,' (a thin paste made in Italy). To this mould, having made also in wax the ingates and vents as described before, (namely, attached to the bottom, and coming up to the ingate,) cover it altogether with the before-mentioned composition, and tie it up in the same way with iron wire, and pour in the silver. The handles and feet also of the vase should be cast in the same manner, and should not be wrought with the hammer: in large vases particularly I would advise the artificer to make feet by casting, for, having to bear so much greater weight, were they beaten out of sheet they might twist.

"I will mention, also, one or two other methods of moulding this sort of things, so that the artificer may select that which most suits him. The one which follows is very much to the purpose.

"I pounded some fresh moulding plaster and passed it through a sieve, the like I did also to a brick of terra cotta; I took two-thirds of the latter, and the same quantity of plaster, and diluted both of these with water till they were of the consistency of a sauce, adding thereto some burnt plaster. Using then a soft hog-hair brush, I laid this composition upon the wax, in the same way as I had done with the mixture of earth. But the plaster should be all laid on at once (for if laid gradually it sets), and afterwards, with a wooden trowel or ladle made for the purpose, add as much of it as the thickness of a finger, and then leave it to set. When it has done so, tie the mould with fine, well-tempered iron wire, and then dilute with water the remaining brick and chalk which has not passed through the sieve, and put it over the mould to the thickness of a knife-blade, and so that it may perfectly cover the iron wire; always observing, that the larger the mould the thicker must this outer shell be. When the artificer is not driven by hurry to finish the work quickly, as is generally the case, he should place the mould in the sun, or some dry place, or where there is smoke, and there leave it till all dampness has left it. After this, with a temperate fire, he should cause the wax to run out; when it is all removed he should quickly increase the fire, and bake his mould in the same manner as we described that of earth, &c. to be baked. This is all that has to be done in this system of moulding; I hold it to be an excellent one, and very suitable for expedition, according as the artificer may be more or less pressed for time

in finishing his work. There is another manner of casting the above-mentioned articles which I will also describe. The workman should take the wax models and divide them into several pieces, and then mould them in powdered earth and in boxes, as before explained. When they are moulded in the best way they can be (and I now speak of the under-cuttings, which are unable to come out of the powder), cast these latter in lead; they can be then cleaned and thinned as the master may desire; after this mould them, and cast the silver in the same boxes. This is also an excellent method, because, when the artificer has moulded the wax models in lead, he can reduce their thickness according to his wish; moreover, these lead-moulds will serve on such other occasions as may occur." *

IX.—THE ARTS OF CHASING, JOINING, SOLDERING, SANDING AND GRAINING, OR GIVING TEXTURE, BURNISHING, HATCHING, AND COLOURING PLATE OF THE CINQUE-CENTO PERIOD.

The following very interesting and characteristic account is also translated from the "Trattato dell' Oreficeria" (Chapter 5):—

"All those articles, which amongst goldsmiths are called small-ware work, are wrought with punches and chisels; such as rings, pendants, or earrings, bracelets, and certain medallions (worn in hats and caps) made from very thin gold-plates, on which figures are worked in low, half, and perfect relief. Amongst goldsmiths, Caradosso da Milano, who, in the times of the Popes Leo, Adrian, and Clement, executed many most excellent works of this description, remains, in my mind, unsurpassed.

"In treating of the two usual methods of working with the chisel, one of them being less easy of execution than the other, we will first describe that followed by Caradosso, which was the most difficult of the two.

"That worthy artificer made, in the first place, a most careful model in wax of his subject, and filling up with clay the under-cuttings, cast it in bronze; he then took a plate of gold, the thickness of which increased towards the centre, not so much, however, that he could not easily bend it, its width being also greater than that of his model. Having heated and worked the plate to a raised form, he placed it on the bronze model, and then hammered it with tools or punches made of birch or wild cherry, gradually causing the plate to take the forms of the figures on the model; taking care, however, that the gold should not break, using his tools, whether of iron or wood, with great dexterity on either side of the plate, and always striving to render the gold of an equal thickness throughout. The carefulness of Caradosso in this was very great.

"When he had brought the medallion to the height of relief he desired, he commenced the forcing of the metal between the legs and arms and behind the heads of the figures; giving to this much attention: and having brought the parts so well together that their edges joined, he cut away the grounds which remained under the legs, arms, and other parts of these figures, as he also did to all the remaining parts which were detached from the field.†

"The work being brought to this point, he commenced the joining it by the method called soldering by fusion or heat, which he did as follows. He took a lump of verdigris in its purest state (not having been previously used for any purpose), the size of a walnut without the rind, a sixth part of sal-ammoniac, and as much borax; ground them well together, and with the addition of a little very pure and clean water, liquefied them in a glazed bowl. When this composition became of the consistence of an oil-colour, he, with a wire, laid a slight thickness of it upon the before-mentioned parts to be joined, *i. e.* between the arms and other parts of the figures; and upon this composition of verdigris he placed with his borax-box a little well-ground borax: he then made a fire of pure unused charcoal, and placed his work in it, arranging the ends of the charcoal so that they turned towards the parts he wished to join, for the reason that the ends breathe or puff out a little, and adjusted some pieces also over the work, in the manner of a grating, taking care, however, that they should not touch it. When the metal became of the same colour as the fire, he began blowing with a pair of small bellows, in such a manner that he caused the flames to play all around his object. Should, however, the stream of wind be too strong, a danger would be caused of the work melting and being thereby spoilt: for this reason he observed the greatest care, and watched for the glittering and moving of the first pellicle, as it is called, or outer coating of the gold. As soon as this took place, he quickly sprinkled his work with a little brush dipped in water; and in this manner the parts became most excellently joined without any solder at all. Having, by the above method—(which is not called soldering, but is rather bringing the whole work into one piece, for such is the power of the verdigris in company with sal-ammoniac and borax, that only the first pellicle or outer coating of the gold is by their agency moved; and being slightly melted, these outer surfaces of the gold join in such a manner that the whole becomes equally entire and solid),—Caradosso having, as I said, thus joined his work, placed it in very strong white vinegar, adding thereto a little salt, and so left it a whole night. The effect of this was, that in the morning he found it whitened and cleaned from the borax. He next took some stucco,‡ with which he filled the whole of his work, so as to be able to work on it with his chisels or punches, which he had provided of all sizes, gradually diminishing from large to small, and made without a cutting edge, having to be used for bruising or denting, and not for cutting away.

"In working the metal, some small holes or cracks will unavoidably occur; the method of joining with verdigris, &c., above described, must not, in these cases, be adopted, but a solder should be used made as follows:—Melt six carats of fine gold, and, when liquefied, add of fine silver and copper together one carat and a half. With this solder, or stopping, the holes or cracks made in working should be filled up; and every time a soldering takes place some of this 'stopping' should be put on the holes previously so stopped, so that the subsequent soldering may not cause the previous one to run. All parts of the work being thus soldered, he again placed it on the stucco and re-worked it with care and patience till he had brought it to perfection.

"This is the whole of the method followed by Caradosso, which I freely confess I learnt from him, nor am I unwilling to do so; indeed, obliged and grateful, I continually return him infinite thanks and praise (for to me there is no greater vice than ingratitude), not wishing to assimilate myself to many who, having but just received a benefit, instead of feeling an obligation to their benefactor, strive directly to injure and malignantly oppress him. As, however, it happens that I have another method of working to speak

* In this way, probably, the singular lead-casts used by François Briot were made.

† "The plate should be made of the best gold, of at least 22 carats, that of 23 being too soft for working, and that of 21½ too hard and dangerous in soldering."

‡ "This stucco he made of Greek pitch, mixed with a little yellow wax and some well-pounded brick."

of, easier than that of Caradosso, and containing some particulars not practised by him, I do not do so with any intention of obscuring in the slightest manner his fame; the many acknowledgments made by me showing the obligation I feel to him: but as it often occurs that additions can easily be made to things already in operation, so it has chanced to me in this matter.

" I now say, then, that when the model has been made in wax and the design determined, a plate of gold of the form before described (viz. thicker in the middle than at the sides) should be worked slowly on the reverse side with the large chisels or punches, bulging it roughly or sketchily in the form of the wax model. Working in this way, the bronze model used by Caradosso is not required, and the work would thus be much advanced in less time than the bronze model could be cast; moreover, the slight staining of the gold, caused by the bronze every time the metal is heated, is not required to be removed, as it is in the other case, by glass dust (a very useful material, however, as it removes all fumes arising from the bronze).

" By following the above method the artificer will avoid those impediments I have indicated, and will be able quickly to re-heat his work without ever having to sand it. As some pieces which I worked by this system here occur to me, in speaking of them, and shortly describing the manner in which I treated them, I think I shall better succeed in explaining to the reader what I would say.

" A Siennese gentleman, named Girolamo Maretta, commissioned me to make a gold medallion for him: in this I introduced a Hercules accomplishing the labour of tearing open the jaws of the lion. I made these figures in whole relief, and so much were they detached, that the heads hardly seemed to touch the ground, so slight were the junctions. This piece I executed without making a bronze model, following the last-mentioned method, striking alternately on the face and on the back of the plate: with such patience and care did I finish it, that it gained me this reward (and I say it with the greatest satisfaction), that the most excellent Michelagnolo Buonaroti condescended to come even to the chamber in which I worked to see it; as is known to many worthy artificers who were present on the occasion. This occurred at Florence in the year 1528. This most wonderful man having examined my work, spoke of it in these (his own) terms (I do not, however, wish therefore to make these words a matter of merchandise, or to exalt myself, as many artificers with unbridled ambition are in the habit of doing, adapting in all their discourses expressions purporting to have been used by him; it having been my practice ever to strive rather for the reality than for a mere appearance),—having, as I said, examined with a careful eye the outlines, the muscles, and the attitudes of these small figures,—he said—' If this little work, finished with that care and beauty which I observe in it, had been carried out in a large size, either in marble or bronze, we should have seen a marvellous work; and to my mind I do not believe the ancient goldsmiths could have executed their works with more excellence than I find in this.' So much did these words excite me to work, that I set myself to make large figures; and the more so, from its having been afterwards told to me that Michelagnolo expressed himself to the effect, that one who had completed with such perfection a small work would not, in one of a larger description, have arrived at the same happy result. Not for the purpose of overthrowing the opinion of such a man, but so that I might by study and practice avoid such impediments as, in the carving in marble or in the casting in bronze of large figures, might have prevented me from attaining that true and esteemed manner so much sought after in these arts, did I therefore set myself to carve and cast large subjects in marble and in bronze.

" But to return to the point from whence I digressed. The medallion having been seen by Frederigo Ginori, a Florentine gentleman, who much esteemed skilful persons, he requested me to make one also for him. Being of a truly noble mind, and having placed his affection upon a lady of high rank, he expressed his own idea, by wishing for an Atlas sustaining heaven, according to the fiction of the poets,—giving the spirit to his invention by adding the motto, ' Summa tulisse juvat.' When I heard this, I set myself with great pleasure to serve him, and did so in this manner. I first made a small model with careful study, and then I resolved so to make the medallion, that it should have the field of *lapis lazuli;* and the heavens which Atlas is described to bear on his back (the Atlas I had already modelled in white wax) I made of crystal; cutting thereon with careful design the zodiac and other figures of stars. This done, I prepared a plate of gold, and, with great patience, by degrees I brought into relief the figure of Atlas; by holding in front a small round anvil, on which, from time to time working, I, with a small hammer, drew the gold of the field, putting it in the arms and legs of the same figure, for the purpose of equalising the thicknesses: in this manner did I almost finish the figure. This method is called ' working in the round,' from the work having nothing underneath, as would be the case when placed on pitch, *i. e.*, on the before-mentioned stucco. When I had brought my work to the point I have mentioned, I filled it with stucco, or pitch, as we are accustomed to call it, and by means of punches or chisels I brought it up to the point I wished. I then detached it by degrees from its field of gold; but this is very difficult to explain in words. I will, however, try to do so in the best manner I am able. We have said in what manner the arms and legs of the figures are joined, leaving them attached to the field of the medallion; but in the method we are speaking of they have to be detached from the field. The artificer, working on a little anvil with a small hammer, should strike gently with its point, and giving a slight action to his hand should, with the punches, so strike within and on the sides, as to cause the figures to become swelled up on the field. When it is required that the figures should be left detached upon the field, it should never be bulged up, and for this reason care should be taken that the field of the said figure does not get out of its level; but as in the present case of which we are treating the field is not required, it should be bulged and forced out wherever the workman may think fit. When he shall see that there remains sufficient gold to enable him to join the back of the figure, then he should separate it from the rest of the field, and, with the gold remaining on the figure, joining it gently, he should solder it, and give it the last touches and finishing, without placing it any more on the stucco: he should be careful also not to allow any opening to remain in his work through which the stucco might pass. In such manner, then, did I finish my Atlas; and on those portions of the figure which were to be placed on the *lapis lazuli* which I had chosen for the field of the medallion, I soldered two strong stems of gold, and having pierced the *lapis,* I secured it well thereon. Having thus finished the figure, I placed the crystal ball (representing the heavens, and therefore engraved with the zodiac and other celestial figures) upon Atlas' shoulders, it being also supported by his upraised hands. I then added, as a finish to the medallion, an ornament of gold, full of leaves, flowers, fruits, and other beautiful things, within which I set it. Thus completed, I gave it to the gentleman, who expressed himself highly contented with it; and at his death (for he died very young) he left it a legacy to Luigi Alamanni, a most excellent poet,* and his particular friend: the latter, after the siege of Florence, going to France into the service of King Francis, gave it to that king, considering it a fit present for such a lord. This medallion being greatly

* Author of the "Coltivazione di Riso."

admired by Francis, caused his majesty to condescend to inquire of Alamanni who might be the master who had made it; and was thus the means of my being afterwards called into his service.

"Being also fit for our purpose, I will here speak of a gold clasp of a round form, which I made for Pope Clement the Seventh, with which he fastened his mantle, and partly of the manner in which I worked it. This clasp was of the diameter of a palm (three inches), and from its large size very difficult to work, for in small works the material is more obedient to the hand. My labour in this was so much the greater, inasmuch as I was tied to certain jewels which were to be set in the compartments of it; amongst them was a diamond, which had been bought at the price of 36,000 scudi (about 7600*l.*) Upon this most noble gem I adjusted a figure of our 'Heavenly Father,' seated, and giving with fitting dignity the benediction; the head and arms of which I had made quite round, the remainder being attached to the field. Around this figure I arranged more than one troop of angels; of these some wound themselves round the borders of the robe, and some I arranged with skill amongst the other jewels I had to employ; part of these cherubs I made in whole relief, some in middle, and others in low relief, according as I wished them to appear near or distant, following in this the rules of design and perspective. Having made the model of the exact size of the intended work, I took a sheet of gold, larger by a finger all round than it would be when finished, and commenced bulging it in the middle, striking it with small hammers on the face of an anvil; but on the inside I struck it with the point of the hammer, thus causing it to swell up very much in the middle; and where I observed that it was too thick, I worked with the punches on either side, till the principal figure, that of the 'Father,' began to assume a suitable form. In this way, little by little, using all sorts of punches, with patience and enthusiasm, I made the gold plate obedient to me, and in a few days I very nearly got the figure of the 'Father' quite round.

"Whilst I was thus quietly working, in consequence of certain invidious persons belonging to this profession having said, to some familiars of the Pope, that I should not succeed with honour in this work, and that I was working in a manner very different from that of Caradosso,—both more dangerous and less beautiful,—the Pope sent for me, and gently asked me if, after I had brought to him the model in wax, I had made any other? I therefore showed him how much I had up to that time done, to his very great content and pleasure; and he was pleased to favour me with words to this effect (speaking, turned towards the many gentlemen who were around him, and, perhaps, some of them the same who had done me this evil turn), 'that I had greatly improved upon the model which I had already submitted to him.' His Holiness then inquired of me how I should manage to work out of the plate the little angels which were in the model, without spoiling that which I had already done? I replied that, in the same manner as I had relieved the figure of the 'Father,' I should be able to bring up those of the angels, that is to say, bulging little by little the gold plate with the punches on either side of it, till I had by degrees distributed the gold to where I found it was most required; that as there were some of them in very high relief, to bring them up to the required height I should have to treat them in the same manner as I had adopted in the figure of the 'Father,' but that as the others were in less relief, I should not have so much difficulty with them, adding, that the greatest labour in working the above plate was in keeping the gold of an even thickness. When I had said this, his Holiness asked me why I had not followed the method of Caradosso in working; to which I said shortly, that that artificer, before he began to work, made a bronze cast, a method which appeared to me to cause greater difficulty and to consume more time; that, had I been governed by his system, I should have been obliged to piece and join the work several times; thus exposing myself to the dangers which in soldering the fire is apt to cause; whereas in the method which I had adopted in working the plate, such necessity would not occur, and I should get forward more easily and with greater despatch.

"Leaving his Holiness thus satisfied, I departed, and returning to operate on the above work, I commenced with my punches relieving the cherubs, which were in number fifteen, without having to solder in my work any cracks whatever. After having joined the gold between the heads, arms, and legs of these little figures, I began detaching them from the field, and joining that part of the field which had been separated by the portions I had detached; and I then with great skill soldered them, adopting the method before spoken of—that is to say, making the solderings with 'stopping.' When it occurs that works of so large a size have to be executed, the skilful artificer should be careful to put them into the fire as little as possible, for the purpose of avoiding their being soiled by the solderings, for, should any enamellings be required, such soilings would interfere with their clearness. For this reason I got into order all the splits, and all those parts that I had joined together, such as the arms, the legs, and the heads of the figures, and when properly arranged I soldered the whole work in one firing: working thus, in four firings I managed to solder everything. The solderings being completed, I set myself to clean them carefully, particularly those on the field, and when I saw that these were clean and quite equal in thickness, placing my work on the pitch, I worked at it with the punches; and as there were, as I have said, figures of infants in both high and low relief, and also another sort, on the field of the work, which had been wrought with only the large punches, I profiled the whole of them, and afterwards taking my work from the pitch, I well roasted or tempered it in the fire; and replacing it on the pitch with its bottom up—that is to say, burying the figures in the pitch (having for this purpose rendered some of the latter somewhat more soft than I had it at first), I commenced depressing with the small punches those cherubs which I had profiled from the face of the work, and forcing out somewhat more those which had to appear more forward than the others. Having done this, I took the work from the soft pitch and replaced it in the first or harder sort, thus always working it up to greater perfection.

"There were, as I have said, several jewels to be set in this clasp. For this reason, I made a bottom with a hook or clasp, which fixed it to the papal cloak, and I worked it with various sorts of shells, masks, and other things, which I thought would add greater beauty to the work. This bottom plate I fixed on with screws, which held it most strongly, nor could it be seen how it had been joined. I afterwards enamelled the work in several places, particularly in the frieze which was around it. Finally, I gave it the last finish in this manner:—To smooth down on all the parts which were represented as naked the marks of the punches, chisels, gravers, and files, which are used in such works, I provided several slips of stone, with points shaped like chisels. These should be four or five in number, and the chisel-like points should diminish in proportion. There is nothing which gives greater beauty to this kind of works than an excessively clean surface; and this can only be obtained by means of certain stones. The result of their use is, that the surfaces left by the iron tools do not appear by any means so much coloured as before. I therefore, with these stones, called snake-stones, adding a little well-pounded pumice, and using their points, levelled and cleaned the naked portions of the figures. In finishing the draperies with which they were clothed, I have

been in the habit of making a tool from a very thin and highly-tempered piece of iron, which, when broken in half, provides on the broken surfaces a very fine grain. With these broken surfaces I worked upon the draperies, by striking the tool with a hammer weighing a little less than a couple of scudi (two ounces); and thus I gained the effect I desired. This method is called by goldsmiths graining (or giving texture). To give effect to the heavier draperies a small pointed iron tool (not broken) must be used. By hammering this upon these draperies, the appearance of a thicker material will be produced. This has the name of granulating. To mark the separation of the planes of the field, a thin and well-sharpened chisel must be used, and with this they should be scored crossways, as otherwise they would not show at all well. This has the name of hatching.

"After I had done these things, I placed the button in a well-cleaned glazed basin, and caused some young boys to make water thereon, the urine of these being warmer and purer than that of men. After this I commenced the colouring. The colour is composed of equal parts of verdigris and sal-ammoniac, very clean saltpetre being added, to the amount of a twentieth part of the two former. The whole of these I ground together. They should, however, never be ground on either iron or bronze, but upon stone; either porphyry or any other—porphyry, however, being the best. When well ground up, they should be put into a glazed porringer, and the composition diluted with white vinegar till it be of a consistency neither too liquid nor too solid. This composition I applied with a very fine hog-hair brush over the work equally, the thickness of the blade of a knife. I then lighted a fire with half-burnt charcoal—that is to say, charcoal which, having been previously used, had lost its power—and made the coals sufficiently level for the work to stand thereon. Having put the work on this fire, I took with the tongs some well-lighted coals, and applied them wherever I found the composition too thick, observing carefully that the verdigris burnt equally, and did not crack in the burning; for there is a difference between causing it to burn and causing it to dry upon the work. Should this occur, a good colour would not be produced; moreover, it would be difficult to afterwards detach it with the brushes. When the verdigris is very nearly equally burnt, the work, thus dried and hot, should be taken from the fire and placed on a stone or wooden table, a clean basin being turned over it, and there left till it be quite cold. It is then to be covered all over with the children's urine (we have spoken of), contained in a clean glazed basin, and cleaned with hog's bristles. This is the method to be followed when there is enamelling; but works that are not enamelled may, as soon as the verdigris is burnt, be placed thus hot in the urine and then be finished. The above were the methods I adopted in this work; and when I came to the setting the jewels in their places, I did not fail to do that with my best skill, by means of pins and screws, fixing the ground in this way as strongly as though it had been soldered.

"I think it well here again to warn the artificer who may have to set large and small jewels together in such works, to see that they are arranged in his design with judgment, for it often happens that goldsmiths will adapt with great disproportion some large gem as an ornament to a small figure, thinking that the difficulty arising from the largeness of the jewel will excuse them, as occurred in this same button; for the Pope being resolved to have therein a figure of God the Father, many of the goldsmiths in their designs placed the great diamond directly in the breast of the figure, and as it was impossible to make the figure large in proportion to the gem, it resulted that there was but little grace in such an allocation. The Pope was sensible of this fault, for having looked at many models (mine was the last), he said to those masters that he would have wished the diamond not to have been so employed. In reply they said, that it would be difficult to arrange it otherwise. His Holiness making then a sign that I should approach and show my model, he saw that I had employed the diamond as a sort of seat, on which I had placed the 'Father.' So much did this model please him, that he at once consigned the work to me. Therefore (as I have said), do I advise the goldsmith having to set similar jewels, to be careful to observe good proportion and good design in his work.

"There is also a practice in this art of gold-plate working of making small figures of the size of half a braccio (about one foot) or less, as may be required, which I will illustrate by the means of an example, as I have hitherto done. At the time I was working at Rome, there was among the Cardinals a pious custom of keeping in their cabinets the image of the Blessed Jesus Christ on the cross, in size rather more than a span;—the first which had been made were worked in gold with excellent design by Caradosso, for which he had received one hundred gold scudi a-piece. As I have done with regard to the medallions of sheet gold, I will now also do by treating first of Caradosso's method of executing these crucifixes, and then mentioning mine, which, for the reasons I shall give, I think easier and safer than his. When Caradosso had made his model the exact size of his intended figure (the legs being separated, that is to say, not laid over, as is customary in crucifixes,) and finished it as he wished, he cast it in bronze; he then took a sheet of gold of a triangular shape, about two fingers larger all round than the model, this he placed on the bronze crucifix, and using small, but long wooden hammers, he continued beating till he gave it a form rather more than half relieved; then, taking his punches and hammer, he carefully hammered it on either side, thus giving to his figure that relief which he thought sufficient. Afterwards, with the same punches and hammers, he beat the rims which remained of the gold of the figure; so that at last, in touching each other, the roundness of the head, body, arms, and legs, was formed; he now filled it with stucco, and with his punches and hammer again went over the whole, working up the chief muscles of each member of his figure with great feeling and skill. Removing it from the stucco he joined the gold together carefully in the before-mentioned manner, leaving open a hole between the shoulders to enable him to take out the stucco: he then gave the finish with his small chisels; and when he was near to the last working which the figure had to receive, he gently laid the feet over each other. Such was the method followed by the above artificer. I only differ from him in this,—that in such works I cannot countenance the adoption of bronze, it being in its nature most inimical to gold, and causes it to break, introducing great difficulty into the work. I, however, by means of punches and various anvils (called by goldsmiths snarling-irons,) with the skill and certainty acquired by long study in the art, contrived to complete my works without first casting in bronze; by this method of mine I brought my work to completion much more quickly, and escaped from the fumes of the bronze, which, as I have said, stain the gold: in all other points I adopted the system of Caradosso.

"To show to my reader that I have not borrowed these practices from other artificers, but have acquired them through my own industry and experience, by putting them to the test of execution, I will mention a work in plate I had to execute for King Francis I.; which, on account of its size (if in no other respect), is worthy of the notice I purpose making of it. This piece of plate, then, was a gold salt of an oval form, two-thirds of a braccio in length, and the first base of this oval was four fingers thick. The composition consisted principally of two figures, one representing Neptune, god of the sea, and the other Cybele, goddess of the earth. On the side where Neptune was I figured the bosom of the ocean, upon which was a shell, and the god

seated triumphantly thereon, drawn by four marine horses, his left hand holding his trident, and leaning with his right arm upon a boat, which was to contain the salt, with several skirmishes of marine monsters around; and in the waves on which the boat was placed were seen fishes swimming about. This figure was made from a sheet of gold quite round, and rather larger than half a braccio, by means of punches and hammers, as before mentioned. Upon the other side of the salt was standing, on the shore, the figure of a woman of the same size, metal, and roundness, representing the Earth, whose legs touched those of Neptune, one being extended, the other gathered up, but crossed, my intention being by this attitude to represent the plain and the mountain. In her left hand she held an Ionic temple richly ornamented, which served to contain pepper, and in her right a cornucopia with all its beautiful appurtenances. Upon the earth or shore on which she was placed were leaves and flowers, also little animals skirmishing and playing together: both the land and the sea had thus each its own appropriate life and ornaments. Besides these, in the thickness of the oval were eight niches; the first four contained Spring, Summer, Autumn, and Winter: in the remainder were Dawn, Midday, Twilight, and Night. Thus did I ornament these niches, the angles of which, as well as several other places in the work, were interlaced with little bands or threads of ebony, the contrast of their black colour adding much to the beauty of the whole. Lastly, I placed this salt upon four little ivory balls, which being half-sunk in their boxes, enabled the machine, by their rolling about, to be moved backwards and forwards easily. Several parts of this piece were enamelled, such as the fruit, leaves, flowers, trunks of trees, and all the waves of the sea, according as our art requires and suggests.

"When I had finished this salt, and fixed a day for taking it to the king, an event happened, the relation of which will serve to conclude our treatise, and also will show to skilful men that, though subject to the scheming of envious and malicious persons, they have, in fact, no cause to fear their evil designs. A certain Monsignore, whose name I will not mention, envying, for what cause I know not, my success and the honour shown me, devised a plot against me worthy of his own weak mind. On the day the king was to look at this work of mine, this gentleman tried, by distracting his majesty, to prevent him from so examining my work as to perceive the extreme pains I had taken;—even to such an extent are vile minds urged by malignity. The day before that on which I was to go before the king, this sagacious old man, knowing of the arrangement, paid me a visit, showing me, at the same time, some antique bronze figures; small, but really good: having asked me what I thought of them, I praised them highly as they deserved, offering to give for them a sum which I cannot now remember: he left me apparently quite satisfied. But at the time that I was exhibiting my salt to the king, he, according to his intention, being also there, and feigning to be present by chance, presented the before-mentioned antiques to his majesty, adding the testimony I had borne as to their perfection and value. Having examined and somewhat praised them, the good king, turning to my work, said, 'We ought to be not a little grateful to the artificers of our own time, when they also can place before us objects of their own, not less beautiful than these antiques.' Having said this, he dismissed me, praised and rewarded beyond my deserts. Such was the result of the cunning of this hateful old man, who afterwards paid me a visit, making an excuse for disturbing me with the bronzes, by saying, that it was quite by chance he was that day with the king, having sometime back destined them for his majesty. I, however, pretended not to be aware of the action he had committed, which was done merely that these figures should be put into comparison with my salt. It is, however, time to conclude this treatise, and to commence that on the beautiful art of intaglio."

X.—THE ART OF DIE-SINKING (AS PRACTISED BY CELLINI IN THE MAKING OF CARDINALS' SEALS), CONTAINING ALSO HIS METHOD OF SAND-CASTING.

We translate the following particulars from the sixth chapter of Cellini's interesting work:—

"In the art of making Cardinals' seals no one has shown greater perfection than Master Lautizio, a goldsmith of Perugia, who worked at Rome in the year 1525—the making of dies for the stamps of the cardinals being his only occupation. These seals are made about the size of the hand of a child ten years of age, and have the shape of an almond, the title of Cardinal being indicated by a composition of figures, and their family arms cut in intaglio. The price Lautizio received for each amounted to 100 scudi.

"I will now, according to the custom I have adopted, first speak of some works of this description which I have executed, and then of the method of producing them, particularly describing that followed by Lautizio. In a seal I was commissioned to make for Ercole Gonzaga, cardinal of Mantua, I engraved the Ascension of Our Lady, with the Twelve Apostles, that being his title. Another, richer in the number of its figures, which I made for Ipolito da Este, cardinal of Ferrara, and brother of Duke Ercole, I engraved with a St. Ambrogio on horseback, holding a scourge in his hand, with which he is driving away the perverse Arian crowd; and as St. John the Baptist also formed part of his title, in the adjoining compartment (having made a division lengthwise on the seal) I placed St. John preaching in the wilderness. For the Mantuan seal I received 200 ducats, and for that of Ferrara 300 were paid me.

"In the execution of these seals the artificer should, in the first place, taking a black stone with a flat face, draw on it the design which the seal has to bear, and then, with white and somewhat hard wax, he should model the relief which he desires the seal to produce in stamping. When he has well finished the wax model, he should take some burnt chalk or plaster (volterano, or other chalk, provided it be fine), and, having oiled the wax design (using for this purpose a clean miniver brush, dipped in olive oil, being careful not to lay on too much, as that would clog the model and prevent the plaster from entering into the more delicate parts), he should make a boundary round it with fresh and soft earth, about two fingers in height, and then pour on the liquid plaster, painting it as it were upon the wax with a largish miniver brush. When well worked in, it should be left to set, and, having become firm, it may be detached from the wax, which will not be damaged in the least, as, from the intaglio having to be used as a stamp, there can be no under-cuttings. The mould should then be cleaned from the irregularities which will exist on its edges.

"Having now arrived at the time for casting, as there are two methods of doing this—and, in silver casting, one easier than the other, both being good—we will speak of each of them, so that the artificer may adopt whichever may be most to his mind; advising him to make trial of both one and the other, as some improvement may suggest itself, as occurs continually in the practice of the goldsmith's art. The first method, that followed by Lautizio, we now treat of, in which the sort of earth used

by brass-workers and stud-makers, who cast the trappings for mules and horses, is employed. This earth is made of volcanic sand, an excellent specimen of which I saw in the river Seine at Paris. On account of its good qualities, I think it worthy of notice. It is found in an island called La Sainte Chapelle, in the middle of the Seine, is excessively fine, and has the quality, so different from other sands, of not drying, as occurs so much with them, when used for the purpose of casting in boxes. With this sand, gold, silver, brass, and other metals can be cast. But, before we speak of the other earths fit for moulding, it will be better to demonstrate the manner of moulding the plaster for casting the seal.

"Having the damped earth in order, and the plaster being made quite clean, it should be dusted over with some very fine charcoal dust, or it may be smoked with the flame of a candle or lamp. Either of the methods is good, and being so well known, we need not speak further of them. When the plaster cast has been dusted or smoked, it should be moulded in the boxes, which ought to be large and strong enough to bind it. This being done, that portion in which the figures are moulded should be well dried (we are now speaking of Italian sand, not that of the Seine, which we mentioned lately), and a cake of dough should be made of the shape and thickness of the proposed metal, whatever it may be; the chalk mould should be smoked in the flame of a candle, the dough cake placed thereon, and then also the other box, which will have been ready baked and dried. This must now be filled with the same damp earth, which must be done with skill, so as not to break the dried portion, in which the figures have been already moulded. The mould must be opened again, and the dough cake removed, and the ingates should be made; also two vents on the underside—that is to say, they must both of them begin in the lower part and come out from the upper, near to the ingate. This part also being dried, both of them should be slightly smoked with a candle, as we said before. When the mould is cold, the silver or other metal, being well melted, should be run into it, it having been found by experience that the metal flows into the mould better when cold than when hot.

"There is another method, different from the above, observed by Lautizio, which, as it is better in many points than that we have treated of, we shall describe for the benefit of the reader. Over the wax model of the subject of the seal a cast should be made with very fine plaster, in the manner we have before described. Some plaster should be taken separately, and as much in quantity as a third part of the plaster of the marrow of a sheep's horn, which should be well burnt, and both one and the other should be well mashed up. To these should be added as much as a fourth part of the whole of tripoly, and the same quantity of pumice, and all the ingredients must be well pounded up together. When this has been done, as much water (as will suffice for the materials) should be added, mixing it up into the form of a sauce, neither too thick nor too liquid. The plaster mould made on the wax should be now oiled with a miniver brush and olive oil, and put by till dry—the plaster by its nature absorbing the oil, when it has of itself dried to such an extent as to be yet damp (for it should be neither too dry nor too moist), a wall of sand not less than two fingers high should be raised around it. This having been done, the composition of plaster, horn, and tripoly before mentioned, should be poured on the oiled mould, and with a miniver brush be painted thereon, this being repeated till it has been laid two fingers or more thick; so that at last a mould is made of an almond shape, four fingers in thickness, which substance will enable the ingate to be cut, and will be suitable for casting in either silver or any other metal. When the plaster is well dried, which it will be in about four hours, the two parts should be skilfully separated, so that no portion of the subject may be broken. It may be here mentioned, that it is much more easy to separate the simple plaster from the wax than it is to detach the composition, the former being stiffer than the latter.

"If it should happen that a head, an arm, or any other part of any of the figures, should remain in the hollows of the mould, two methods may be followed in repairing such an accident. Firstly,—if the artificer can extract the pieces, by taking some ground tripoly and using a miniver brush they can be readily joined together again; for as the subject is in relief, it is easier to see where reparation is required than when it is in intaglio. The second method is to clean carefully the plaster, and to oil it afresh, and then to lay on the composition in the before-described manner, it being probable that though it failed in the first trial it will come out on a second without any defect occurring.

"I should wish that the prudent goldsmith would now pay attention to what I purpose saying. Let him make a model of wax of the exact size he intends the seal to be, and of the shape before described; this being made concave, and being placed on the design, let him be careful to give to it that thickness which he intends the seal to have when cast. Then let him place the parapet of sand round the wax in the manner we have already mentioned, taking care that the ingate be made so long as his discretion may suggest, as it is a fact that when the ingate is long the work comes out better. Many trifles I might add which, however, I consider superfluous, inasmuch as I am speaking to men who are not inexperienced in this art; I will, therefore, pass these things by. As I said before, the ingate of wax should be added to the model, and in the same manner the vents should be left, fixing them underneath, but causing them to come round the seal to the ingate above, not letting them, however, communicate with it, so that they may breathe freely and answer their purpose. When the mould has arrived at this state it should be tied up with well-tempered iron or copper-wire, and be placed in the sun or other warm place, so that it may be well dried; and afterwards it should be laid amongst some bricks put together in the form of a furnace, within which a fire should be made for the purpose of making the wax run out. I would here mention that the wax must be pure, and unmixed with any other substance which might cause damage, because being pure, a beneficial effect will be produced. When the wax shall have been thus removed, the fire should be skilfully increased round the mould, so as to bake it well; an improved result being thereby obtained. It must then be allowed to cool, as it receives the silver better when cold than when warm, it being, however, understood that in this cold state there be no dampness. The mould is now ready, and the silver, being well melted, may be poured in; and that it may not over-burn, throw on it a little borax, and over that a handful of well-ground crust of wine-butts (or tartar).

"When the cast is made, the mould should be untied and opened, or it should be put into water, which is a better plan, as thereby the silver is more readily detached. The cast should now be freed from the ingates and the vents, and by means of the file brought into shape. The seal being so far executed, it is customary to fix it in the stucco previously mentioned, and (placing before it the first cast in plaster, which was in intaglio) to work up the silver to the effect of the model with punches, gravers, and chisels; thus completing the design of the seal, including the connexions of the figures, their draperies, and all other parts of them: for the purpose of trying the effect, it is well to often mould the portion on which the artificer is working in black or other coloured wax.

"It may be mentioned here that careful workmen who really love their art are in the habit of cutting the heads, hands, and feet of their small figures on a punch of steel, as in this manner they are better seen. Having carefully cut the above members, the workman stamps them in the places where they occur in the seal by striking them with a hammer. He should also provide himself with a steel alphabet, cutting in steel with the same skill as he showed in the heads, &c. the several letters.

"When I had similar works to execute I always re-made my alphabet, for if worn out the artificer will gain but little credit. The letters should be well proportioned, such as would be produced by a pen cut to write somewhat thickly, which as it turns in the hand would make the bodies of the letters even and regular. This I consider the best rule, observing, however, that the letters should not be either too thick or too small, neither should they be too long nor too thin, as thus they would have no elegance of form—in truth, by keeping a middle course, and inclining slightly to slenderness, error will be avoided, and they will appear very graceful.

"With regard to the ornamentation of the seals, as it is necessary that they should bear the arms of the Cardinals for whom they are made, I have always ornamented them with figures and other rich designs, never sparing any trouble. I have also been in the habit of making curious animals or figures serve for the handles, adopting for that purpose some emblem of the gentleman who had placed the seal in my hands—such, for instance, as in a small seal I executed for Ercole Gonzaga, cardinal of Mantua, in which, as a handle, I made a Hercules seated on a lion's skin, with his club in his hand; this figure, to which I gave a great deal of study, was very much praised by Giulio Romano, the highly-esteemed sculptor and painter, and was thought worthy by the painters and sculptors of that day of being imitated. Some there are who with great skill and boldness have cut seals without first casting them, having only made a model or design, and in so working have gained great honour; it is always necessary, however, to make the dies or punches we spoke of above, though I also have worked them after the last-named manner. I, nevertheless, consider it to be an easier and safer method to cast them; both systems, however, are worthy of being tried by the artificer who strives in this art for more than a mere mediocre reputation."

XI.—ELECTROTYPE.

The electrotype process, whether applied to the reproduction of elaborate works of art, or to coating with the precious metals objects manufactured in baser material, has already assumed so important a position among the mysteries practised by the metal-worker, that any account of his labours would be very incomplete without some allusion to this recent but highly-useful invention.

The application of the electrotype process is twofold, as it may be employed to form an article, entirely by electro-deposit, or merely to overlay an object already made in one metal with a superficial deposit of another. In the former case a careful mould is taken of the original object in fine clay, plaster, wax, or gelatine, and the face of this rendered conducting, by being brushed over with fine plumbago, or bronze powder. To obtain a quick and good deposit the face should be polished as much as possible. The mould is then placed in a trough containing a solution of the metal required, which, when connected with a galvanic battery, is gradually deposited on the inside, and becomes in its turn an exact copy of the original. By this process the shrinking and distortion incident to ordinary casting is avoided, and no mechanical imperfection interferes with the form or finish of the work. If the mould is taken in a porous substance, as plaster, the back must be brushed over with wax or tallow previous to its being placed in the trough, otherwise the metallic solution may pass through, and form what is called "surface deposit," making the face of the work rough. Electro-silvering or gilding is effected by suspending the object to be overlaid in a trough, containing a solution of the metal, and placed in connexion with a battery, when a deposit of any thickness may be obtained, without effacing the modelling or engraving on the original surface.

The solution of silver commonly used consists of cyanide of silver dissolved in cyanide of potassium, and it is prepared as follows:—A mixture of four parts of nitric acid diluted with one of water is heated in a vessel, and metallic silver is gradually added. (The fumes from this brewing are highly deleterious, so that the operator must carefully avoid breathing them.) When the silver is quite dissolved the fluid is further diluted with water, and cyanide of potassium is added so long as a white precipitate is formed. When this precipitate, which is the cyanide of silver, has quite settled, the clear solution is drawn off and preserved, and the vessel is again filled with water, which in its turn is drawn off as soon as the precipitate has again settled. When, by repeating this process three or four times, the soluble salts have been effectually washed out the precipitate is dissolved in a solution of cyanide of potassium, and is then ready to be used for plating: it should, however, be previously filtered to remove a black sediment which is generally formed, consisting of iron, silver, and cyanogen, and which, if left in the solution, would settle on the surface of the article receiving the deposit, and make it rough. The strength of the plating solution may, of course, be varied, but the proportion of one ounce of silver to a gallon of fluid is practically found to be the most convenient mixture. By adding a little sulphuret of carbon during the process the deposited silver comes out burnished, instead of dead. The best way of doing this is to mix one or two ounces of the sulphuret of carbon with strong silver solution in a bottle, and to add some of the fluid to the plating solution as may be required. The above is the method commonly adopted, but Napier* recommends as the best and least expensive the employment of a battery. "This is effected," he says, "by taking advantage of the principle of the non-transfer of metal in electrolytes. To prepare a silver solution, which is intended to have an ounce of silver to the gallon, dissolve 123 ounces of cyanide of potassium in 100 gallons of water; get one or two flat porous vessels, and place them in this solution to within half an inch of the mouth, and fill them to the same height with the solution: in these porous vessels place small plates of iron or copper, and connect them with the zinc terminal of a battery; and in the large solution place a sheet or sheets of silver connected with the copper terminal of the battery. This arrangement being made at night, and the power employed being two of Wollaston's batteries, of five pairs of plates, the zincs seven inches square, in the morning there will be found dissolved from the sheets from 60 to 80 ounces of silver. The solution is now ready for use; and by observing that the articles to be plated have less surface than the silver plate forming the positive electrode, for the first two days the plating solution will then have the proper quantity of silver in it.

* "A Manual of Electro-metallurgy," &c., by James Napier, F.C.S. London, 1851.

The arrangements for the process adopted in some of the large plating manufactories is somewhat as follows: the vat or plating vessel is made about six feet and a half long by thirty-three inches in breadth, and the same depth, and generally contains from 200 to 250 gallons of the solution; the silver plates which form the electrodes are now usually fixed upon light iron frames, because these are not affected by the solution. Two battery-troughs, consisting of six batteries of three-pair intensity, are arranged at the end of the vat. Mr. Prime of Birmingham and Messrs. Elkington have substituted powerful magnets as permanent sources of electricity, upon the principle now generally understood, that when the armature of a magnet is set in motion in front of the poles of the magnet, an electric current is generated. This is accumulated by large coils of copper wire, and the ends being brought into the decomposing cells, the same effect is produced as results from the battery current. In practice, the armatures of large magnets are made to revolve very rapidly by means of steam-power, and hitherto no loss of force has been discovered in them.

Articles to be plated are first boiled in an alkaline ley, to free them from grease, then washed from the ley and dipped into dilute nitric acid, to remove any oxide that may be formed upon the surface; they are afterwards brushed over with a hard brush and sand. The ley should have about half a pound of soda-ash or pearl-ash to a gallon of water. The nitric acid into which the article is dipped may be diluted to such an extent that it will only just act upon the metal. When the article has been thoroughly cleaned and dried, a copper wire is to be attached to it, for the purpose of suspending it in the solution. It is next dipped into nitric acid, as quickly as possible, washed through water, and then immersed in the silver solution, suspending it from the wire which crosses the mouth of the vessel in passing from the zinc of the battery. The article is coated with silver instantaneously, and ought to be taken out after a few seconds and well brushed to remove any particle of foreign matter that may still be on the surface. It is then replaced in the solution, and in the course of a few hours a coating of the thickness of tissue paper is deposited on it. In depositing silver from the solution, a weak battery may be used, but then the resulting silver will be soft; should, however, the battery be as strong as the solution will allow, the deposit will be equal in hardness to rolled or hammered silver. The average cost of depositing silver in this way is 2*d.* per ounce. In order to secure a perfect adhesion of the deposit in plating large articles, a small portion of quicksilver is dissolved in nitric acid, and of this solution as much is added to water as will cause it to give a white silvery tint to a piece of copper when dipped into it; the article is then plunged into this liquid until the surface is white, and, after being well washed in clean water, it is placed in the plating solution.

The solution for electro-gilding is prepared by dissolving the gold in three parts of muriatic and one of nitric acid, which forms chloride of gold. This is digested with calcined magnesia, and the gold is precipitated as an oxide; the oxide is then boiled in strong nitric acid to dissolve any magnesia in union with it, and the oxide being well washed is dissolved in cyanide of potassium. This, which is the common method, gives a proportion of potash in the solution, as an impurity; it is not, however, very detrimental to the process. Napier prefers the battery process, which is similar to that described for silver, having a solution of cyanide of potassium, with a gold positive electrode, and the negative electrode, which may be iron or copper, in a porous vessel also charged with cyanide of potassium. For all operations of gilding by the cyanide solution it must be heated to at least 130° Fahrenheit. The articles to be gilt are cleaned in the way already described for silvering, but are not dipped into nitric acid previously to being put into the gold solution, as the gilding is generally performed upon silver articles. The actual process of gilding is much the same as that of silvering, and an immersion of three or four minutes is generally sufficient if the solution and battery are in good condition. The former generally contains from one-half to an ounce of gold in the gallon, but for smaller articles a weaker solution will suffice. On removing a gilt article from the solution it should be of a dark yellow colour, which when scratched will yield a rich deep gold. If the colour is blackish it ought not to be finished, for it will never either brush or burnish up to a good colour. When the battery is too strong, and gas is given off from the article, the colour will be black; if the solution is too cold, or the battery weak, the gold will be light-coloured, so that every variety of shade can be obtained.

For more minute details of the processes we have been describing we may refer our readers to the work of Mr. Napier, from which we have derived much assistance, and to those of Messrs. Smee, and Shaw, who have severally written treatises on the subject.

DECORATIVE PROCESSES.

ENAMELLING GENERALLY.

Enamel is, *per se*, a transparent, colourless substance, composed of oxide of lead and silex, fused together; a small quantity of oxide of tin renders the substance opaque; and when it is wished to obtain a clear and brilliant white tint, manganese is added.

The primitive material, whether transparent or opaque, when it receives the addition of oxide of gold, acquires a beautiful purple colour: to procure a fine red, a mixture should be made of sulphate of iron and of sulphate of alumina; and the two being brought into a state of red heat, in a reverberating furnace, should be united to the primitive colourless paste. Yellow may be obtained directly from silver; and the process of staining the delicate yellow, so much used in English glass painting, from the time of Edward III. downwards, may be perfectly applied to enamel. Green is given by oxide of copper; violet by black calx of manganese; and blue, of the most brilliant kind, may be obtained from the oxide of cobalt. Many different authors give receipts for the formation of colours; and, as a general rule, the substances employed to give tints to stained glass produce exactly the same results when applied to enamel. To obtain any variety of hue and any degree of opacity or transparency may, therefore, be regarded as perfectly practicable; although we may observe that the purity of the colours depends almost entirely on the strict attention paid to the amount of heat applied to evolve them.

To enter more minutely into the structure and composition of the pigments used in the enameller's art would be wearisome to the unprofessional man; and to those who are acquainted with its details it could only be to repeat a "thrice-told tale." We shall, therefore, proceed to an examination of the nature of the leading varieties of the processes of application.

These divide themselves, both structurally and historically, into six genera, each reigning for a time, and then disappearing; no successive race of artists having attempted a revival or perpetuation of the manner of its predecessors.

I.—BYZANTINE FILAGREE, OR CLOISONNÉ ENAMEL.

Firstly, then, as most primitive and original, we shall notice the "Byzantine," or "filagree mosaic enamel," which obtained throughout the Eastern Empire, from about the reign of Justinian down to the latest time at which her artists may be presumed to have retained a distinctive and original character. The middle of the eleventh century appears to have been the time at which *this* style reached its perfection, and was most in demand throughout Europe. As the writings of the celebrated artist-monk, Theophilus, have been ascribed by his learned editor, Mr. Hendrie, to this period, we may with safety trust to his description, as furnishing us with an authentic and accurate account of the Greek method of proceeding.

Presuming the existence of a vase, which it is desirable to decorate with enamel, he gives directions for securely setting gems, by soldering to the flat surface of a piece of gold, to be afterwards attached to the vase, long narrow strips of the same metal, perhaps the eighth of an inch in width, and the thickness of a sheet of thin paper; and then turning a minute margin down, so as to clasp the gems, which being placed at some distance apart leave cellular intervals, which he thus proceeds to fill up. Having carried the gold strip round again, so as to strengthen the outside margin of the chamber prepared for the enamel, he says, "Then, with the same measure and rule, you cut small bands of exceedingly thin gold, in which you will bend and fashion whatever work you may wish to make in enamel, whether circles, or knots, or small flowers, or birds, or animals, or figures; and you will arrange the small pieces delicately and carefully, each in its place, and will fasten them with moistened flour over the coals: when you have filled one portion you will solder it with the greatest care, that the slender and fine gold may not be disjoined nor liquefy, and do thus twice or three times until the separate pieces adhere a little." As his own language is somewhat prolix, we shall venture to abbreviate the remainder of the worthy artist's description. This is its purport:—Then take prepared glasses of various colours, proving previously that they will all fuse at much the same temperature; heat the pieces of each tint glowing hot, and throw them in that state into a copper urn in which there is water; they of course fly to small fragments, and may be easily brought to a fine powder; place each colour in a small vessel, and, with a quill pen and minute spatula, fill with the different powders the cavities formed by the filagree: enclosing the plate or band of gold so prepared in a small iron muffle, and making a strong fire round about it, fan gently, and watch until the holes made in the upper part of the muffle begin to glow. It is then time to remove the iron case, which, when it has cooled gradually, may be opened, and the powder will be found to have vitrified and become a strong enamel, enclosed by the filagree, the gold lines of which form the outline of whatever may have been portrayed. It should then be rubbed down and polished, and the effect produced will be beautiful, resembling a miniature glass window, excepting that for the coarse bounding lines of the leadwork is substituted the thread-like gold filagree.

II.—EARLY LIMOGES, OR CHAMPLEVÉ ENAMEL.

For a description of our second genus of enamel, "the Early Limoges," or "champlevé work," we should regret extremely the absence of contemporary evidence, were we not able to console ourselves with that of Mr. Albert Way, which, though it may seem somewhat paradoxical to say so, is of very nearly equal value. That distinguished antiquary, in his admirable paper on enamel, printed in the "Archæological Journal," vol. ii., informs us that this variety is termed in France *champlevé*, to imply "that the field of the metal was removed, or tooled out, leaving certain slender lines, which serve in place of the filagree, to keep one coloured enamel distinct from another, and to define the outline and chief features of the design. The metal plate in this instance, which in almost every known example is of copper, was chased out in the same manner as a wood-cut prepared for printing with letter-press; the casements, or cavities, excised on the face of the metal served to receive and hold firmly the enamel, with which they were filled by means of fusion; the face having been polished, the lines of metal were gilded, and thus produced an effective appearance, as contrasted with the bright colours, to which they served as an outline. The thickness of the metal gave great durability to enamelled works of this description, and unless the enamelled object or plate were bent or violently bruised, the colour could not easily be detached. Some examples are, indeed, to be seen in as perfect preservation as if they had only just been withdrawn from the furnace. The best works of this kind were produced during the twelfth and thirteenth centuries."

We have drawn thus on Mr. Way's resources, because, on comparing his description carefully with those given by Messrs. Petit, Pottier, Willemin, and the Abbé Texier, and with the condition of all the specimens of Early Limoges work that have fallen under our notice, we have found it to possess more than their accuracy, and far less than their mystification. It may be well to notice that these enamels were not always placed on a uniformly flat surface, portions of the subject represented being worked in the copper in relief, either, as the French term it, "en bosse," or "repoussé," (that is, beaten up from the back), prior to the commencement of the engraving. The same cavity was also often filled up with paste of two or three colours, thus producing shades, streaks, and even patterns. It appears probable that this style of work was first manufactured at Limoges in the early part of the twelfth century, or perhaps even earlier; and that it continued in universal estimation and demand throughout Europe, until the frightful siege of the town and massacre of its inhabitants, by Edward the Black Prince, in 1370, which finally destroyed the long hereditary art.

III.—EARLY ITALIAN, OR TRANSLUCENT ENAMEL.

This, our third variety of enamel, prevailed in Italy from about the year 1300 to 1550. Giorgio Vasari, who published the first edition of his celebrated "Lives of the Painters in the latter year," describes the process very distinctly; and as he probably only echoes the result of anterior experience, we may look upon him as a sufficient contemporary authority. In the thirty-third chapter of his "Introduction to the Arts of Design," he says: "There is yet another kind of work on gold and silver, commonly called enamel, which is a species of painting, mingled with sculpture; it serves for vessels to hold water, since that does not displace the enamel. Whoever would labour on gold and silver has need of the finest of either metal; this is necessary in order to keep the paste in its place. You with the graver make a low relief in the silver or gold plate, leaving fine raised lines here and there to separate the colours, so that when the enamel covers the plate the paste is of course thicker where the sinkings are deepest, and, consequently, seems more intense in colour; where, on the contrary, the enamel forms only a very thin coating to the parts which are most in relief, the high lights appear; and thus it is that 'chiar'oscuro' is obtained. The plate being fully prepared, take glass enamels of various colours reduced to a fine powder; mix them with pure water, and keep them distinct in small vessels, remembering always that those which serve for gold should be different from those used for silver. With a minute spatula each colour should be spread with the greatest nicety—(*con pulita pulitezza*)—in its place; and the gold or silver plate being laid upon an iron shelf fixed in a small muffle, should be enclosed in an earthenware furnace of proportionate size, in which a fire being lit, it should remain until the enamels run. It should then be withdrawn, allowed to cool gradually, and when perfectly hard, ground down to an even face with a hone and glass powder; it may then be replaced in the furnace and watched until the enamels begin to liquefy; this second passing through the fire serves to give a lustre to the surface." We have not translated the worthy Vasari quite literally, as his style is somewhat diffuse, but have rather given the sense of his description, comparing it carefully with that furnished by Benvenuto Cellini, in his elaborate treatise on goldsmiths' work, with which it will be found to agree in all essential particulars.

IV.—LATE ITALIAN, OR JEWELLERS' ENAMEL.

This variety was to a certain extent eclectic, since it adopted much of the previous style in Italy, adding to it a skilful use of champlevé, or incised work, and its chief peculiarity was the power of covering with transparent enamel raised and rounded surfaces in the highest relief. We appear to be indebted to Benvenuto Cellini for the introduction of great improvements into the enameller's art. In his invaluable treatise on goldsmiths' work he details these at length, and as the particulars he gives possess exceeding interest, as illustrating both the present and preceding variety, we have translated the whole chapter referring to the subject.

Cellini treats, in Chapter IV. of the "Trattato dell' Oreficeria," of "the art of enamelling on gold and silver, and of the nature of the various enamels."

"In Florence," says he, "as I have already said, the art of enamelling has flourished to such an extent, and so eminently, that the goldsmiths of Flanders and France (where this art is also much practised) have increased their skill not a little by their observation of the works of our artificers, judging their system of enamelling to be the true one; but in consequence of the difficulty attending it, some, following other more easy methods, have shown considerable skill in the execution of numberless works, which have been much praised by those but slightly skilled in the art.

"I, however, have to treat of the true nature of enamelling; I therefore commence by saying, that, in the first place, a plate of gold or silver, somewhat thick, and of the shape that the subject requires, must be fixed upon a composition made of Greek pitch and pounded brick, carefully incorporated with a little wax, the quantity of which must be regulated by the season of the year: for example, if it be winter, more wax will be necessary than in the summer season. Having placed this stucco upon a piece of wood, large or small, according to the size of the subject, the metal plate should be heated, and then fixed upon the composition. This done, mark with compasses an outline, which may be less than the edge of a knife, and then reduce the whole of the plate with great care, just so much as the desired thickness of the enamel: when the plate is reduced to this point, draw all that which is required to be engraved, whether figures, foliage, or animals, and cut them with the graver and with chisels with great attention. Works of basso-relievo should be made of the thickness of two sheets of ordinary paper, and cut with sharp iron tools, more particularly the outlines. If the figures be clothed, it should be understood that thin draperies are better displayed by the introduction of numerous folds. It is also of great importance and beauty to fill the work with chasings and small folds or flowers, such as, placed on a thick cloth, would form a damask. This treatment is the more valuable, inasmuch as, besides the beauty resulting from it, the enamels on finishing do not fly; according, also, to the excellence of the cutting will be the beauty of the work. The workman should be warned (after any portions of the enamel are set) against touching the work with the chisels and hammer in the hope of improving the basso-relievo, for should he do so the enamels will not hold.

"In chasing, it is necessary to rub the intaglio with some willow or nut charcoal, using at the same time some saliva, for the purpose of better displaying the cutting, the brightness caused by the tools confusing the sight. As the work will become somewhat dirty and greasy, when the engraving is finished the plate should be boiled in a lye of ashes, in the manner before described for works of niello.*

"Before proceeding to treat of the methods of enamelling in gold and silver—(in which some diversity is found, in consequence of the different tempers of the enamels, such as occurs, for instance, with the transparent red, which cannot be used on silver),—we will particularly speak of the enamels themselves. This art was in use amongst the ancients, but it has been conjectured, from various observations, that they were unacquainted with the transparent red enamel, which was discovered by a goldsmith who amused himself with alchemy; and who, when trying to make gold, found remaining in his crucible, after fusing his metals, a residue, or coating, of red glass, which he thought so beautiful, that, with the aid of his experience, he used it with his other enamels. This is considered by all goldsmiths, with good reason, as the most beautiful of enamels, and has received from them the name of 'smalto roggio.' There is another sort of red enamel, neither transparent nor of a good colour, which, however, can be used upon silver, differing in this also from the smalto roggio, which, as we have said, cannot be so used, many trials having proved that the silver will not receive it. It would appear, that from the smalto roggio having been associated with precious metals in the search for gold, the latter is not disdainful of its presence, but, on the contrary, agrees excellently well with it. Enamels are made of all colours.

"In returning to enamelling, we may say, it is only another species of painting; it is therefore necessary to be well provided with enamels; and that these should be well pounded is a point of great importance, hence it is a saying amongst goldsmiths, 'Smalto sottile e niello grosso,'—'Niello thick and enamel fine.' Bruise, then, the enamel in a mortar a span in diameter, made of well-tempered steel, and pulverise it with a steel pestle of a proper size, using at the same time the purest water. Some there are who bruise the enamels dry, on stones of porphyry or serpentine; but by experiment it has been found that the use of the steel mortar and water is a better and cleaner method: these steel mortars are made in Milan. When the enamel has been pounded very fine, we have found it better to pour off the water in which it has been pulverised, and to immerse it quickly in as much aqua-fortis as is sufficient to cover it, using for this purpose a glass vessel, and there to leave it for the space of eight minutes. This done, place the enamel in a small glass phial, with a good quantity of clear fresh water, and wash it well, so that no dirt may remain; the aqua-fortis having removed all greasy matter, the water will clear off any earthy substance which may be present. The enamels being washed, they should be placed each one by itself in a small vessel of glass or glazed earthenware, and should be kept continually under water, adding new water as required, that they may not dry up: should they do so, they would be quickly spoiled. Now, let the goldsmith who is desirous that his enamels may turn out well pay great attention: let him take a piece of perfectly clean paper, and masticate it, or soak and mash it with a hammer; then wash it well, and squeeze out the water: this is to serve as a sponge, to be applied from time to time to the enamels as he places them on his work, for the drier they are laid the more beautiful they will become. Nor would I omit to mention another piece of advice very important in enamelling, which is this: Before the goldsmith begins enamelling he should take a plate of gold or silver, and make thereon with a chisel as many small cavities as he has enamels in use; he should then pound and place in these cavities a small quantity of each, for the purpose of making a trial to see which may be more or less quick in fusing, it being necessary that they should all flow at the same moment, for should one of them do so readily and another tardily, they would interfere with one another, and would not produce a perfect result.

"For the better application of the enamels, an instrument is used (called a 'palettière'†) made from a thin sheet of copper cut in imitation of the fingers of the hand, to the number of five or six fingers at the most, and also of a finger's width. A piece of lead is then cast in the form of a pear with a stalk or stem of iron, and a hole having been made in each of the before-mentioned copper fingers, they are to be placed one over the other on the iron stalk of the pear-shaped lead, which, being held before the work, the copper fingers are to be opened and the enamels placed thereon little by little, according as the discretion and skill of the artificer require them.

"These points having been attended to, the enamelling of works in basso-relievo may be commenced, the vessels containing the enamels being always kept covered to protect them from the dust: the same skill is now required as the painter displays in his

* Chap. ii. "After the intaglio shall have been placed in a lye to boil for a quarter of an hour, it should be laid in a basin of very clean and fresh water, and be well rubbed or scoured with a brush, so that it may be cleaned from all sort of dirt."

† Literally, *a fan*.

art. Enamelling, as we have said, being very similar, both colours and enamels being rendered liquid, the former by means of oil or water, the latter by fire.

"The enamels should be taken up with a small copper spatula, and spread by degrees very thinly upon the work, distributing the different colours with taste, which are green, flesh-colour, red, violet, tawny, blue, grey, and colours known as 'cappa di frate' (monk's frock), and 'cavezza di moro' (Moor's bridle); such being the names of these enamels. To these must be added an enamel of the colour of sea-water, which is most beautiful, and can be used on both gold and silver. Amongst these, white and turquoise are not enumerated, as they do not belong to the transparent class. The first application of the enamels is called laying the first coat: this must be done very thinly, and with great care; the various colours must be placed very cleanly, in such a manner that they shall not spread into one another: they should appear as though painted.

"When this has been perfectly done, the furnace, well heated with soft charcoal, should be ready. The fire should be in proportion to the object to be placed therein, and when raised to the proper intensity, the work being placed on a sheet of iron so much larger than the work that it can be laid hold of with a pair of tongs. With these, being taken up, it is to be brought to the mouth of the furnace, and held there to become warm; and gradually, as it becomes hotter, to be placed in the centre of it, being very careful indeed, as the enamel begins to move, not to let it run altogether, but to remove it gradually from the furnace, so that it may cool by degrees. When quite cold, lay the second coat in the same way as was done with the first, and return it in the same manner into the furnace, subjecting it a little more to the fire, and withdrawing it also as before mentioned; observing if the work requires the addition, in any of the extremities of the different parts, of more enamel, which requires to be added with great judgment: it is a thing, however, very difficult to teach. The furnace should now be supplied with fresh charcoal, and when at a proper intensity the work should be again heated; in such a manner, however, as is suitable both to the enamel and the gold.

"After this it must be drawn with great celerity from the furnace, and a boy should, with a pair of small bellows, blow upon it to cool it. This is to be done only when the 'smalto roggio' is used, one of the characteristics of which is, that of being peculiarly affected by extreme heat, under which it not only flows as do the other enamels, but also changes from red to such a yellow as to be scarcely distinguishable from the gold. This result is called by goldsmiths 'opening;' and when it does take place, it should, when cold, be taken up with the tongs, and be again placed in the furnace, which should now contain a very weak fire as compared with the previous one, and then by degrees it will again become red: but care must now be taken, as soon as it has attained the required colour, to draw it quickly from the fire, and cool it as before with the bellows,—for should it be too much heated, it would become so highly coloured as to turn almost black.

"The enamels having been properly applied, should now be rubbed down and thinned with snake-stones till they are sufficiently transparent and show well; and should, to finish them, be polished with tripoly. This method is called 'hand-polishing,' and is the most certain and beautiful. Another manner of polishing is as follows:—When the enamels have been rubbed and thinned by the above-mentioned stones, and so well washed with pure fresh water as to be perfectly clean, they should be again placed on the iron plate; and a fresh fire having been made ready in the furnace, should be placed within it so gradually that they may not be suddenly warmed, and when well heated they should be left in the furnace till all the enamels begin to flow and become very pale. This is the manner in which is effected the second method of polishing enamels; it is performed more quickly than the first; but as all enamels by their nature contract, some more and some less, when they are polished by the latter method, the work is less perfect than when treated according to the first system (hand-polishing). It should again be observed, that where there is no 'smalto roggio' (as where the metal is silver, on which, as we have said, it cannot be used), when the work is taken out from the furnace, it should be removed so gradually that the enamels may cool of themselves, and not by compulsion, as is required when the 'smalto roggio' is amongst them.

"It is a practice also to enamel pendants and other various works, in which case the snake-stone cannot be used from the circumstance of there being sometimes subjects in relief enamelled, such as fruits, leaves, small animals, masks, and the like; in these, enamels most finely pounded and washed are employed. In placing the enamels upon such subjects in relief a great deal of time is occupied, for they become so dry as to fall off when the work is turned round; to remedy this inconvenience some pear-seeds should be taken (the fullest being chosen) and placed to soak in a glass vessel containing a little water; if placed there over night they will be fit for use in the morning. In commencing to enamel, the enamels being placed on the palettiere or fan, a single drop of this pear-seed water should be put upon each of the enamels on the palettiere, and they may then with security be applied to the work, this pear-seed water forming a species of size, which so holds the enamels that they do not fall off; no other would answer the purpose so well as this formed of pear-seeds. Such are the methods to be observed, nor are there any other differences in enamelling in either gold or silver to be spoken of, than such as we have noticed.

"In conclusion, I wish to mention that Caradosso was very successful in enamelling, as I would not deprive those strangers who were the equals of my countrymen of that honour which is their due."

In addition to these remarks of Cellini we may observe, that one of the most trying problems involved in the execution of works in jewellers' enamels consists in the difficulty of so chasing the small gold figures, over which the enamel covering, or *revêtement*, has to be spread, as to leave just sufficient room for the enamel to bring the forms up to their right degree of fulness, without involving lumps of enamel, which would be sure to fly in cooling. In many of the modern works which have been executed in France in imitation of Cellini, the requisite amount of allowance for the coating of enamel has not been made with nicety, and the figures are consequently sometimes too thin, and at other times their forms become coarse. Another point in which the modern works are defective, as compared with the ancient, is, that due allowance is rarely made for modifying the thickness of the enamel pastes in proportion to their opacity or translucency. The beautiful transparent ruby is too often put on in lumps, and the comparatively opaque blues, which need body to produce their full sapphire tint, are laid on so thin as to produce but a washy effect. In the exquisite vase (which was exhibited at the Exhibition of Mediæval Art at the Society of Arts in 1850), now the property of the Marchioness of Beresford, and known to have at one time formed a portion of the crown jewels of France, the acme of perfection in this style of enamelling has been reached. The perfect purity and sparkle of the ruby, the retention of full and rounded modelling in every part, and the adhesion of every portion of the vitrified pastes, combine to render it a perfect model for the study of the art-workman.

V.—LATE LIMOGES, OR GRISAILLE ENAMEL.

The fifth, and certainly not the least interesting process we shall describe, was that adopted by Leonard Limousin, in the revived enamel manufactory established by Francis I. about 1530, and which lasted until about 1766, when it sunk, under the feebleness of its professors, the Noualhiers, into utter abeyance.

The last artist of that name presented to a friend in the beginning of this century a most valuable manuscript, which has been published by M. Maurice Ardaut, in his interesting pamphlet, "Sur les Emaux, les Emailleurs et les Ouvrages, et les Procédés de Fabrication en usage à Limoges." It bears date 1583, and may very possibly have been dictated by the father of the school of Leonard Limousin, and fully details every particular connected with the late Limoges method of proceeding. To quote the exact words given would require more space than we can afford: we shall therefore give the spirit rather than the letter of the author's revelations. First, says he, prepare a pure white enamel for "fondason," or foundation, and break it up to a powder; then spread it on a polished copper-plate all over, put the plate in the oven and thoroughly bake the ground tints, after which outline with black and burn it in; then paint the subjects either in full colours, or (as more commonly practised) in grey only, and pass the plate again through the furnace, then put on with white the high lights, ornaments, draperies, nimbi, &c.; with delicate gold lines, finish generally and burn again, when the enamel, now grown into a regular picture, may be considered finished. In order to avoid contraction, the back of the plate was always covered with the paste, so that in cooling both sides might be in tension.

One very curious and characteristic practice was made use of by the late Limoges enamellers, probably to imitate the effects produced through the Italian processes by their contemporaries, Cellini, Il Rosso, and others. It consisted of fastening to the face of the half-finished plate, by a glaze of transparent enamel, pieces of thin silver cut to the forms of draperies, &c., and then painting over them, so as to take advantage of the reflecting ground and the sheen of its surface. Thus, as M. Pottier observes, "The metal grew at last to be entirely subjected to the picture, although still its base or ground; occupying a situation analogous only to that of the canvass or wood in an oil painting." As the striking external character of all the enamels of the sixteenth century is their grey tint of chiar' oscuro, I think we may be justified in calling this variety the *late Limoges*, or "*grisaille*."

VI.—MINIATURE ENAMEL.

The diversity the seventeenth century produced may with equal justice be denominated the *miniature style*, as it was made completely subservient to portraiture, and the execution of small subjects, generally reduced copies of celebrated pictures. The advance made in chemical study and the labours of Sir Theodore de Mayerne, who added many new pigments to the art (most of which have been described by him in a manuscript now existing in the British Museum, and about to be published by Mr. Hendrie), introduced refinements in its manipulation, but at the same time rendered it far too elaborate to be described in the limits of our present work. The chief improvement consisted in increasing the number of firings, and so graduating the condition and fusibility of the colours that the hardest might be used at first, and the more easily melted last; thus admitting of the greatest brilliancy and transparency of tint, and at the same time of the most elaborate finish and retouching. Sir Theodore de Mayerne was physician to James I. and Charles I. in England, and to Henri IV. and Louis XIII. in France: he was the intimate friend of Petitot, the greatest master in this style, and, indeed, of all the eminent artists of his period.

This method is the one most generally practised throughout Europe at the present time.

VII.—NIELLO.

This interesting process possesses a peculiar charm in our eyes, from the fact of its having given origin to the art of engraving; that glorious invention, which multiplies the beautiful creations of the artist's imagination, and thus extends to thousands the enjoyment that would otherwise be limited to few. Dr. Waagen, in his "Arts and Artists in England," has given so concise and lucid an explanation of this art that we cannot do better than adopt his language:—

"The goldsmiths (says he) in the middle ages* used frequently to trace with the graver in metal plates, generally silver, all kinds of designs—sometimes only arabesques, sometimes figures—and to fill up the lines so traced with a black mass of sulphate of silver, so that the design appeared very plain contrasted with the white silver. In Italy, where this species of ornament was applied very frequently, and with the utmost success in the fifteenth century, this mass was called, from its black colour, in Latin, Nigellum, and in Italian, Niello." In this manner church plate was wont to be embellished. Vasari tells us that Maso Finiguerra, the celebrated goldsmith of Florence, about the year 1450, "was the first who, before he filled up the incised lines in the silver plates with the niello, used to apply a black fluid, and laying a damp paper upon them, to pass over it with a wooden roller, by which means the paper imbibed the fluid from the tracings, and thus gave a fac-simile of the design on the plate." The Italian goldsmiths had also another method of obtaining impressions of their silver plates, namely, on sulphur

* The practice of the twelfth century is admirably illustrated in the writings of Theophilus, translated by Mr. Hendrie, as follows:—

"Of Niello.—Take pure silver, and divide it into two equal parts, adding to it a third part of pure copper. When you have placed these three quantities into a cast-metal cup, weigh as much lead as the half of the copper which you have mixed with the silver weighs, and taking yellow sulphur, break it very small, and put the lead and part of this sulphur upon a small copper vessel, and place the rest of the sulphur in another cast-metal cup; and when you have liquefied the silver with the copper, stir it evenly with charcoal, and instantly pour into it the lead and sulphur from the small copper cup, and again mix it well together with the charcoal, and with quickness pour it into the other molten cup upon the sulphur which you had put into it, and then putting down the small vase with which you have poured out, take that into which you have cast it, and place it in the fire until the contents liquefy, and again stirring it together, pour

—a practice which was probably anterior to that of printing them on paper. The late Mr. Ottley, the Duke of Buckingham, and Sir Mark Sykes, have been the principal private collectors of such objects in England, and the Print-room of the British Museum contains many valuable specimens.

It would be foreign to our purpose to dwell longer on this subject, but we would refer our readers for further information to the works of Cicognara, Duchesne, and Mr. Ottley.

VIII.—DAMASCENING.*

" By damascening is generally understood the art of cutting out thin plates of metal into ornamental patterns, and fixing them upon another metal of a different colour, and usually of an inferior character, either by pressure or by grooves previously made to receive them. It would appear that we owe the invention of these processes to the East, for, although mention of the ornamentation of one metal with another frequently occurs in the classic writers, and one Glaucus, of Chios, is even mentioned as having practised it, still it may be questoned if these notices do not rather refer to what may be called parcel-plating than to damascening.

" The art of cutting out one piece of precious metal and fixing it upon a baser, no doubt obtained long before the time of Glaucus, and must be referred even to the remotest periods, when the process of gilding, for which it is a substitute, was utterly unknown. Accordingly we find the most ancient specimens of which we have any mention to have been thus executed. In the breastplate of Agamemnon, the armour of Achilles, and, indeed, whenever armour or similar objects are mentioned by Homer as consisting of two distinct metals, this process must be understood; except, perhaps, in some few cases where the description would equally apply to gilding. In case 87 of the room devoted to bronzes in the British Museum are the remains of the celebrated Etruscan car found near Perugia, which have been executed in this manner. They consist of one or two alto-relievos in bronze, of which the figures are about six inches high: the ornaments, such as the bracelets, boots, and drapery, have been formed by being cut out of thin pieces of gold, which were then applied to the situation they were to occupy, and afterwards fixed by being hammered into chasings cut for the purpose; and where this was impossible from the nature of the work, rivets were employed to secure them. The gold moulding of another article (probably the lid of a box), which has been partly destroyed, shows the rivets very distinctly.

" The same institution also possesses a figure (in Case 1 of the Egyptian Room) ornamented similarly with plates of gold. There is also close to it a small pedestal, with an inscription in hieroglyphics, which, with the ornaments of another statue (in Case 12), have evidently been formed by making a groove in the metal, and then forcing a thread of silver into it.

" That the Romans by no means allowed this art to be dormant is proved by several interesting specimens, which have come down to us in spite of the '*edax rerum*.' The bronze statue said to represent Nero (but more probably of the time of Adrian, if not later), which was found in Suffolk in 1799, now in the British Museum, and of which the thorax presents a beautiful specimen of damascening, is a convincing proof either of their talents in that line, or of the encouragement they gave to the more skilful artists of Greece. Here the last-mentioned process has been adopted, the inlaid metal being of two kinds, viz. silver oxidised in such a manner as to become quite black, and pure silver.

" There are also several pieces of damascening in the Museum to which we must attribute a Roman origin, such as the small pedestal in the Bronze Room and the tablet in the Gem Room, which is of bronze inlaid with gold, and in which the figures are applied in the same manner as we shall mention when describing the Arabian manufacture.

" But by far the most extraordinary specimens are the Contorneates, a species of medals on the use and age of which much learning has been hitherto unprofitably spent, and on which the common opinion is, that they are of the period between Constantine and Valentinian, and that they were used either as prizes for the victors in the Circensian games, or as tickets to the seats, or worn as charms by the charioteers. Some of them have the *vitta* of the head (which is frequently of Augustus, Virgil, Trajan, or Nero,) inlaid with silver; but more frequently the ornament consists of the letters $\frac{R}{E}$ inlaid on the field on the right side of the face.

" Pliny has a singular passage relating to the art of inlaying silver, from which it would appear that when the object was but partly covered with the precious metal it was said to be the ' Punicana Species;' when, on the contrary, it was entirely incrusted, the appellation of ' Deliaca' was given.

" During what may be properly called the dark ages, the art of damascening appears to have been nearly, if not completely, lost to the Europeans; the only exceptions are the celebrated gates of the Church San Paolo fuori le Mura at Rome, which were made in 1070 in Constantinople.

" We must not forget the exquisite articles which Irish ingenuity was producing about this time, where the larger plates of metal are riveted on, whilst the lacertine lines are formed by threads being fixed into grooves previously made to receive them. An

into the iron crucible. Before this cools, beat it a little, and warm it a little, and again beat it, and do this until it is quite thinned; for the nature of niello is such, that if it is struck while cold it is immediately broken and flies to pieces, nor should it be made so warm as to glow, because it instantly liquefies and flows into the ashes. The niello being made thin, put it into a deep and thick cup, and pouring water upon it, break it up with a round hammer until it becomes very small, and taking it out, dry it, and put that which is fine into a goose-quill and close it up, but that which is coarser place again in the vessel and bruise it, and being again dried, put it into another quill.

" *Of Applying the Niello.*—When you have thus filled many quills, take the gum which is called parahas and grind a small piece of it with water in the same vase, so that the water is made scarcely turbid from it, and first moisten the place which you wish to blacken with this water, and, taking the quill, rub off the ground niello with a light instrument upon it carefully, until you have covered the whole, and do this over the whole. Then gather excessively hot coals, and placing the vase in them, carefully cover them, so that no coal be placed nor can fall over the niello; and when it is liquefied, hold the vase with the pincers and turn it from every side on which you see it flow, and in thus turning it round take care that the niello does not fall to the ground. But should it not be completely perfect at the first heating, again moisten it, and superpose (niello) as before, and take great care that no further work is required.

" *On Polishing Niello.*—Holding it in a clean cloth, scrape all the parts carefully which are blackened with the niello with the cutting instrument. Afterwards you have a black and soft stone, which can easily be cut and almost be scraped with the nail, and with it you rub the niello, wetted with saliva, carefully and smoothly everywhere, until all the drawings are plainly seen, and it is quite smooth. You also have a piece of wood from the lime-tree, of the length and thickness of the smallest finger, dry and smoothly cut, upon which you place this wet powder, which comes from the stone and saliva in rubbing, and with this wood and the same powder you rub the niello a long time and lightly, and always add saliva, that it may be wet, until it is made brilliant everywhere. Then take wax from the hollow of your ear, and when you have wiped the niello clean with a fine linen cloth, you anoint it everywhere, and with goat or hart's skin you will lightly rub it until it is made quite bright."

* This interesting notice of the Art of Damascening is from the able pen of Mr. William Burgess, a friend and pupil of the author of this work. It originally appeared in the "Journal of Design and Manufactures," vol. iii. page 161.

examination of the crozier belonging to his Grace the Duke of Devonshire, and another, the property of Dr. Rock, shown in the Mediæval Exhibition at the Society of Arts in 1850, will explain the manufacture better than any description.

"The ring of Ethelwulf, hitherto cited as a proof of the talents of the Saxons in the art of enamel, appears to give them just claims to proficiency in the more difficult one of damascening. This ring, and another in the same room in the British Museum, has had the ground bearing the inscription incised like a champlevé enamel; silver cut out to the forms has then been beaten in, and the whole afterwards filed to a surface. But whilst the art was well-nigh forgotten in the West, the Arabs had obtained a great reputation for their beautiful productions. Theophilus, who probably wrote in the first half of the thirteenth century, especially praises the Arabs for their talents in ornamenting the metals. The principal manufactories were situated in the various town in Mesopotamia; Moussoul or Mosul, however, on the Tigris, appears to have been the chief locality. The articles, which were principally bases or mirrors, made of latten and other alloys of copper, and ornamented with silver, and sometimes with gold, were thence exported to Damascus, which being the most opulent town in the vicinity, and possessing the greatest amount of trade, by reason of its being the rendezvous of all the pilgrims from the north of Asia, on their way to Mecca, naturally received the largest share of those exports. It was also the nearest market for the Crusaders and Latin Christians, who forthwith gave the name of the emporium to the wares themselves. By this, it is not to be inferred altogether that Damascus had no manufactories of her own; the contrary was no doubt the case, but still they must have been of a secondary nature compared with that of sword-blades, for which she was celebrated far and wide.

"In the museum of the Louvre is preserved a most beautiful vase of Arab workmanship, called 'La Vase de Vincennes,' which St. Louis is reported to have brought to France with him on his return from his ill-conducted and unfortunate crusade. It was probably a present from the Sultan of Damascus, as Joinville mentions an embassy from that prince to the French king; and from the inscription we learn that it was made by Mohammed, the son of Zin-Eddin. This vase has been ornamented in the following manner:—The surface of the figure was cut away slightly in the middle, but much more so towards the edges, where it left a rabbet or undercutting. A thin piece of gold or silver of the required shape was then applied, and its edges forced into the above-mentioned under-cutting, and by this means effectually secured. There was another mode of proceeding, which, however, appears to have been less commonly used. The ground having been sunk by means of chiselling and engraving, the ornaments which were left in relief were pricked all over with a sharp-pointed instrument, and then the thin pieces of metal were fixed thereon by pressure.

"Although the protracted residence of St. Louis in the East had, no doubt, a great influence upon architectural ornamentation in general, and on some branches of manufacture, yet it does not appear that this beautiful art was practised in Europe until at least two centuries after his epoch. At last the art was taken up, and finally secured to Europe at the commencement of the fifteenth century, by the cunning workmen of Venice and Milan. It is more than probable that the first-mentioned city took the initiative, by imitating the products of Oriental industry, and thereby, instead of importers, became the manufacturers. But very soon the capabilities of the art became better known, and Italy, which had been the first to introduce plate-armour, now perfected the invention by ornamenting it in the most beautiful and durable manner. This addition to its ornamental resources was particularly acceptable to Milan, then the chief manufactory of armour, not only for Italy but for all Europe, and the extent to which it was applied to arms (both offensive and defensive) may be gathered from the fact, that among the Italians damascening, and lavoro all' azzimina, were synonymous expressions. Not only armour, however, but various other articles, were ornamented with damascening by the industry of the Italian artists. These works upon iron were formed by roughening the whole surface of the metal with a fine graver or file. The ornaments, for the most part consisting of thin threads of gold, were then fixed by means of pressure; the whole was afterwards burnished, which restored the ground, where not covered by the gold, to nearly its original polish. The shield belonging to the Queen, which her Majesty liberally contributed to the Mediæval Exhibition at the Society of Arts from the Guard-room at Windsor, is another example of this mode of treatment; but though we may well doubt whether it was executed by the immortal Benvenuto Cellini, as the figures betray a decided French style, yet it is probable that the damascening might have been executed by some Italian artist at the French court. It was not until a century later that France began to excel in this art; when the productions of Cursinet added additional lustre to the reign of Henri Quatre.

"But to return to the process of manufacture. When the pattern had many solid parts and few or no thin lines, only the surfaces covered by those parts were roughened and the ornaments applied as before; the labour of burnishing was thus saved.

"Very often in this case the gold ornaments were in relief, and would of course require chasing after the pressure necessary to make them adhere. There was yet another way which was occasionally used. It consisted in pricking the outline only of the ornaments in such a manner as to make little raised teeth, to which the gold was then fixed by pressure. When, however, the ground was a less intractable material than iron, the same process was employed which we have described as obtaining among the Arabs, and which process there can be no doubt came from the East through the Venetians. This was also occasionally used even on iron, especially in situations liable to wear, as sword-blades, for example, where the ornamental pattern requires to be on the same surface with the ground. It is to this branch of the art that Cellini alludes in an early part of his Life, where he says:—'Soon afterwards I met with some Turkish daggers, the handles of which were of iron, as well as the blades, and even the scabbards were of that metal. On these were engraved several fine foliages in the Turkish taste, most beautifully filled up with gold.' He then imitated them, and observes, 'My performances were much finer and more durable than the Turkish, for several reasons; one was, that I made a much deeper incision in the steel than is generally practised in Turkish works.' The other reason was, that he used a different kind of foliage, the Turks employing only the chicory leaves; whereas the vine and ivy were the favourites with the Lombards, whilst the Romans, true to their antique traditions, principally made use of the acanthus. He also talks of some antique iron rings being discovered inlaid with gold, which he also copied, and for which copies he received as much as forty crowns a-piece. In his imitations of them, he says, he 'wrought some of these little rings, but made them of well-tempered steel, and then cut and inlaid them with gold.'"

IX.— GILDING AND PARCEL-GILDING, ACCORDING TO CELLINI AND OTHERS.

In Chapter XX. of the "Trattato dell' Oreficeria," Cellini describes the method to be followed when it is desired that some parts of the silver should be left ungilt:—

"When the artificer has determined the places where he does not wish the gold to attach itself, he should take that wheat flour-dust which is gathered from the walls or projections of the interior of the mills where it is ground. This he should mix into the substance of a sauce, and, using a miniver brush, should lay it of a slight thickness on all those places to be left ungilt; he should then dry it well by a slow fire, and afterwards he may safely gild. Besides this there is another method. Pound a piece of chalk, and make it as a sauce with hartshorn glue, or with fish-glue, which is better; whichever be used, however, it should be so much mixed with water as to remove its strength, and use this as in the previous method. Having, however, to describe that which is most useful to the artificer, I should advise him, when wishing to leave parts of the silver ungilt, to use the wheat flour. The chief object should be to work his subject well. This matter of gilding he may safely leave to those whose business it is; he will thus avoid all the difficulties and delays attending it."

Many modes of covering silver plate with gold, and mixed metal, or "latten," with silver, have been in use at various times. Amalgams, formed of quicksilver and gold, and quicksilver and pure silver, are applied in a state of paste to the object proposed to be gilt or silvered, and the mercury being volatilized by heat leaves the precious metal deposited on the surface in a state of the greatest purity; sometimes a piece of plate brushed with a little wire-brush so as to slightly roughen the surface is made red-hot, and while in that state, gold or silver leaf being laid upon it and rubbed down with a burnisher, perfect adhesion takes place. Parcel-gilding, the effect of which we all so much admire, may be most ingeniously executed by using quicksilver as a mordant, applying it in the forms required to be gilt. Gold-leaf being laid upon it, the mercury immediately unites with it, and the application of heat carrying off the quicksilver leaves the gold adhering to the silver only in those places originally touched by the mercury.

HISTORY—INTRODUCTION.

When we reflect on the multifarious uses to which metals are applicable in a highly-cultivated state of society, and what important agents of civilization they have been,—as tools—as originating barter—as serving as the medium by which trade was made to take the place of barter—as associating themselves with the first approximation to ideal beauty in barbaric richness, and as gradually becoming from day to day more indispensable to all, from the highest to the lowest, we could not but look upon any history, which should actually record the modifications of their use, as one in which was written a memoir of the social progress of the whole human race. Such a history it is neither within our power nor our purpose to offer; our aim being to trace only those fluctuations of practice which connect themselves with the cultivation of a sentiment of beauty, and which are based upon the imperative law of perpetual motion, prescribing eternal change as the primary condition of a transitional state of existence.

In this imperfect record we shall endeavour to apportion the amount of observation allotted to each period, by a scale of affinities to what we conceive to be the legitimate scope of artistic metal-work in the present generation, rather than by the archæological interest of the subject alone; and thus, while the traditions of the Italian "bottega" will be plentiful, our record of the works of the archaic and classical ages will be reduced to the narrowest possible compass.

In the present chapter, which may be regarded as simply introductory to our main purpose, we shall pass rapidly in review the circumstances which led to the ultimate practice of the art of metal-work in the four principal countries of Europe,—Italy, France, Germany, and England. In thus adverting to national importance in connexion with this subject, we cannot but express our regret at being unable to furnish a proper amount of information respecting the metal-work of Spain; but little has been written on the subject, and we have as yet had no opportunity of studying *in situ*. Should circumstances, however, "convene," we may hope at some future day to be enabled to supply this *hiatus, valde deflendus*.

The patriarchal and archaic ages are involved in so nebulous an atmosphere, that the keenest eye can scarcely seize the instant at which vapour condenses into substance, and realities take the place of "myths;" and therefore it is that any reference to the legends concerning Tubal Cain, Hephæstion, and Dædalus—the far-famed demigods of metal-work mythology—can serve to but little purpose in the present investigation, excepting to demonstrate the extreme antiquity of the manufacture of metals. From the description of the riches of Abraham in gold and silver, the presents of jewellery offered by his servant to Rebecca at the well, the silver cup given by Joseph to his brother, and the ornaments taken from the Egyptians by the Israelites, we are fully prepared to meet, on such an occasion as the construction of the Tabernacle, with a description of works, indicating a long-continued and fully-developed practice of the arts of metallurgy. The extreme antiquity of molten and graven images, iron tools, beaten work, brazen vessels, metal mirrors, iron beds, and beautiful jewellery, may be demonstrated from the writings of Moses alone. As if in corroboration of that portion of the great lawgiver's narrative which relates to Egypt, we find, in every European collection of any importance, ample confirmation of his account, in the material evidence they offer of the perfect acquaintance of the Egyptians with the most elaborate processes of metal-work.

The commercial relations of Phœnicia—the country to which the invention of glass is traditionally ascribed—spread, we have little doubt, a barbaric species of enamel, not only throughout the countries having seaboards on the Mediterranean, but even in those of the north of Europe and of Asia; and we need not, therefore, be

surprised to find that learned Egypt was acquainted with almost every variety of the art of glass-making and enamel at the earliest period. In the British Museum, several necklaces may be seen formed of small ornaments made in gold filagree, and filled in with precious stones, and what appear to be pastes, wrought and vitrified by processes corresponding with those subsequently made use of by the Byzantines and ancient Irish.

In speaking of the metal-work of the Assyrians, Mr. Layard remarks, that "their earrings, necklaces, armlets, and bracelets, were all of the most elegant forms. The clasps and ends of the bracelets were frequently in the shape of the heads of rams and bulls, resembling our modern jewellery. The earrings have generally on the later monuments, particularly in the bas-reliefs of Khorsabad, the form of a cross. In their arms, the Assyrians rivalled even the Greeks in elegance of design. Ornaments, in the form of the heads of animals—chiefly the lion, bull, and ram—were very generally introduced, even in parts of the chariot, the harness of the horses, and domestic furniture." In this respect the Assyrians resembled the Egyptians. Their tables, thrones, and couches, were made both of metal and wood, and, probably, inlaid with ivory. We learn from Herodotus, that those in the temple of Belus were of solid gold. From the difference in the extent and richness of the work executed in the fitting up of the tabernacle and the temple of Solomon, we learn how much the art of metal-working had advanced during the interval between those two events. The casting and graving of the molten sea, thirty cubits in circumference, would be no mean performance in the present day. For the elaboration of the works of the Tabernacle, Providence had endowed one of the sons of the tribe of Dan with wisdom, understanding, and knowledge, "to devise curious works, to work in gold, in silver, and in brass." It is an interesting coincidence that the mother of the prince of workmen, sent to Solomon by Hiram, king of Tyre, was one of the daughters of the same tribe. We may imagine what the glories of the court of Jerusalem must have been, when we are told that "all King Solomon's drinking-vessels were of gold; and all the vessels of the house of the forest of Lebanon were of pure gold: none were of silver; it was nothing accounted of in the days of King Solomon." From passages in the book of Esther, in Herodotus, Diodorus Siculus, and Athenæus, we learn to realise the gorgeous luxury of Ahasuerus and his court; and on considering the peculiar position obtained by Greece relatively to all other nations, and especially to Persia, we can wonder little at the traditions which have reached us of the extraordinary and almost fabulous beauty of the metal-work produced by a people whose philosophy was art, and whose art philosophy.

In endeavouring to convey some idea of the details of this most glorious school of art-manufacture, we cannot do better than draw on the result of the researches of the learned Müller, whose work is now happily brought within the reach of all English readers through Mr. Leitch's translation. Speaking of ancient Greek art, it is observed, that "with regard to articles of metal—such as Hephæstus, the patron of all smiths, manufactured in the highest perfection—Homer celebrates cauldrons, goblets, tripods, cups, coats of mail, and shields, as partly of native and partly of foreign workmanship. Besides these, there are mentioned a great number of metallic and other shining articles, which it was the custom to dispose in such a way as to produce a striking effect.

"On one of these works of art, the Hephæstian shield of Achilles, Homer even describes large compositions of numerous figures; but the very extent and copiousness of such representations, and the little regard that is therein had to what is really susceptible of representation, almost completely preclude the idea that he describes human works of similar compass. Here the mode of proceeding could have been no other than this,—the metal, after being softened and hammered into plates, was wrought with sharp instruments, and then fastened to the ground with nails, studs, or such-like."

Restorations of the shield of Achilles have been many times attempted,—in the last century by Boivin and Caylus, in the present by Quatremère de Quincy; and it is scarcely necessary to recall the most exquisite work of one of the noblest artists who has ever lived, the *chef-d'œuvre* of the immortal Flaxman.

Working in vessels was brought to much perfection after the Homeric times by means of two great inventions. Firstly, that of casting freely in moulds, which is ascribed to a Samian master, Rhæcus son of Phileas, and his son Theodorus, and which was, no doubt, of great advantage to them in the making of goblets and vessels, in the fabrication of which those artists were distinguished: they appear to have flourished in the forty-fifth Olympiad; and, secondly, by means of the art of soldering,—a chemical junction of metals, in which Glaucus of Chios—a contemporary of Alyattes, and, probably, a scholar of the Samian brass-caster—acquired fame, and in like manner proved his skill by ingeniously-wrought vessels, especially the stand of a

crater at Delphi. This Glaucus was also, according to Pausanias, celebrated for his skill in the art of hardening and softening iron.

"The working of metals with sharp instruments is what the ancients called the 'toreutic' art, with which was also combined, according to the requirements of the task, a partial casting in moulds, but particularly the beating out or embossing with punches. In this manner silver was more especially wrought in the fairest times of Greek art, but gold and bronze also, and even iron in many districts. This branch of art was employed on armour, especially shields; besides the embossed work, a sort of golden design served as an ornament to these, which was, probably, similar to the modern damask work (*tausia, lavoro all' agemina*): moreover, chariots, in particular, were ornamented with embossed silver. Vessels were sometimes provided only with ornaments of a vegetable form,—for instance, the large silver platters; sometimes adorned with mythic representations in relief (*anaglypta*), which were in later times often movable (*emblemata crustæ*), and might be employed in ornamenting different goblets, which were sometimes of gold. The fame of the masters in this department, and the passionate desire of the Romans for the possession of such articles, are conceivable to us from particular remains. The art of the toreutes was likewise put in requisition for ornamental furniture; and that of the worker in gold, which chiefly consisted in embossing gold plates and inlaying gold wire, is closely connected with this branch of art."

"The most important silver vessels which have been handed down to us from the palmy days of antiquity are the cup in the Corsini collection found at Antium; the vase, with the apotheosis of Homer, at Naples; the so-called shield of Scipio (restoration of Briseis), found in 1656 at Avignon, in the Cabinet des Médailles at Paris; the bowl found in Perm, in Stroganow's collection (the contest for the armour of Achilles); the goblet of Aquileia, at Vienna; the vases from Falerii (with vegetable decorations); the rich treasure in vessels of a temple of Mercury found at Bernay. The raised work in these is invariably embossed, and drinking-bowls are placed inside the vessels. The drapery and armour are enhanced by gilding, as is also often the case elsewhere on the Homeric representations. The so-called disci, also, are, for the most part, merely the inner surfaces of goblets."

The extraordinary delicacy and taste of the remains of Etruscan art, preserved in the museums at Rome, Florence, Cortona, &c., clearly demonstrate the wonderful dexterity in manipulation, and the feeling for beauty of design in metal-work, possessed by the primæval Italians. Some specimen of every kind of object, from those involving much of the highest and most abstract design to the humblest article of domestic use or ornament, is to be found either in the above-named museums, or in those of Naples, Paris, London, &c.; and from a careful study of them, and of works such as those of Count Caylus, the Museo Borbonico, &c., a perfect idea of both the earlier and later Roman magnificence may be acquired.

In the Etruscan museum formed by Gregory XVI. at Rome, and in the beautiful series of antiquities which adorn the cabinets of the Cavaliere Campana, also at Rome, there exist numerous indications of the refined skill with which the goldsmith's art, in particular, was cultivated by the Etruscan and other primæval races of Italy. Ornaments for the head, formed out of thin plates of gold, punched all over with the most graceful designs, and enriched with filagree,—circlets to bind around the brows, imitating wreaths of leaves and flowers,—polished mirrors, the backs of which are engraved with compositions even more beautiful than those upon the well-known vases,—chains of wire, plaited as delicately as those for which Trichinopoly is so celebrated,—pins, rings, fibulæ or brooches, collars, armlets, and all other objects of personal adornment, which are worked in the precious metals at the present day, are more or less completely represented in those valuable and most interesting collections.

For the preservation of those relics, which contribute so much to our knowledge of the arts of that ancient and curious population, we are indebted to the usual practice of consigning to the tomb with the remains of the deceased many of those ornaments which had been worn during lifetime; and thus, as it were, by their association with decay, these precious objects have been endowed with a vitality which has enabled them to escape that destruction which would have infallibly overtaken them, but for their comparatively sacred connexion with the dead, and their concealment in the tomb. It is, indeed, unfortunate that no such practice should have contributed to a preservation of those ornaments on which the Romans of both sexes were recorded to have expended such almost countless sums. So great was the passion of the last-named people for sumptuous expense and novelty, that it is to be feared that out of the vast amount of spoils of works of art in the precious metals, which are recorded as having been poured into the Roman treasury, and as having graced her successive triumphs, the greater portion was consigned to the melting-pot, either

to be wasted in procuring for the emperors and nobles the most costly sensual delights, or to be wrought into extravagant forms to minister to the caprice of the Livias and Faustinas of the day. When we consider, in addition to such original sources of destruction of ancient types of form, the incessant pillage which took place in later times by Goths and Vandals, and the ultimate Christian propensity to convert every emblem or fancied emblem of pagan worship into more Christian shape, we can feel little surprised at the fact that comparatively few relics of the skill of the Roman goldsmiths should have been preserved to our days. That their art was in great demand we are assured by constant allusions in classical writers; and that their skill was proportionately great may be fairly inferred by analogy from the evidence we possess of the exquisite dexterity with which every variety of object was wrought in bronze at contemporary periods. Numerous inscriptions—such as "Aurifex Aug.," "Aurifex Augustæ," "Aurifex Tib. Cæsaris," "Aurifices Liviæ"—evidence the fact that goldsmiths were specially retained for the imperial service; and there can be no doubt that enormous sums were lavished upon them.

While we have to lament the dearth of such relics as might enable us to form an idea of the perfection of workmanship with which we may imagine the artisans of the Eternal City to have gratified the imperial taste, among the abundant vestiges of the later periods of the empire which have been left in the provinces and affiliated colonies, many specimens of the skill of the Roman goldsmith may yet be discovered. In examining, however, the various fibulæ and other objects, which bear in their general form, and even detail, evidence of classical design, and which the inexperienced antiquary is apt to at once refer to Roman skill, it is but right to recognise the peculiarities which frequently betray the handicraft of the *barbarian*, labouring to supply the wants of his conqueror, and to accommodate his cunning to the taste of his lord and master. It is the more necessary to exercise this discrimination, since many objects which appear at first sight to be of pure Roman workmanship, frequently exhibit processes of enamelling and glass-inlaying which there appears good evidence for believing to have been essentially Gaulish, probably of Phœnician origin, and to have never been practised, at least to any extent, in Italy itself.

In the museum of the "Studii" at Naples, the most copious collection of objects worked both in the baser and more precious metals, are principally derived from Herculaneum and Pompeii; and from a study of them there can be no doubt that the student of design might derive many valuable hints, both as to the congruity which should exist between the purpose of a vessel and its form, and the judicious application of ornament at the most telling points of the contour. In commencing any such study, he would do well to fortify himself by a careful perusal of the interesting remarks on ancient metal-work published in the "Art-Journal," by Dr. Emil Braun, the celebrated Roman archæologist.

As the political power of Rome sunk into decrepitude, and the arts lost all their pristine fire, the old Hellenic and Etruscan traditions became effete; and there appears no reason to doubt, that by the commencement of the fourth century the goldsmiths of Rome were but little better off than their brethren the sculptors, who were obliged to rob the bas-reliefs from the arch of Trajan in order to decorate that of the first Christian emperor. It is probable that robberies of such a nature were frequent in the later periods of Roman history, more especially of metallic ornaments made in the purest days of the art. The fact that the richer portions of the decorations of vases were for the most part made separately from the vessels they were intended to adorn, led frequently to their appropriation, and to their being afterwards set in the same manner as gems, and applied to adorn objects very dissimilar to those for which they were originally intended. This species of appropriation began at a very early period, since, even during the Republican period, Cicero accused Verres of abstracting the *emblemata crustæ* from the vessels he had borrowed of the Sicilian families.

No two circumstances can be conceived better calculated to have effected a complete revolution in the design and execution of every class of metal-work than the conversion of Constantine the Great to Christianity, and his removal of the seat of empire to Constantinople in the year 330. In the writings of Eusebius, Procopius, and others, frequent reference is made to the magnificent gifts which Constantine dedicated to the service of the churches at Constantinople, and to the vast sums he expended to reward the labours of the most skilled artificers of the time. None of these notices are, however, sufficiently detailed to enable us to form a just idea of the objects so elaborated; but, judging only from the fact that they probably resembled the debased heathen ornaments of the same period, we, probably, have no very great reason to regret the meagreness of their remarks. Ciampini has industriously collected and analysed the majority of these allusions, but without eliciting any very important information on the subject. On the death of Constantine, it appears

that the goldsmiths repaid the favours lavished upon them by the monarch by rendering him the last offices required by humanity; since it is related that his body was exposed on a scaffold in a golden coffin, and surrounded by a great number of golden chandeliers.

The most elaborate processes of metallic manipulation practised by the Romans were doubtless carried, on Constantine's removal, to Byzantium; and the Greeks, grafting upon it their early-manifested love for the mosaic art, speedily originated that peculiar style of enamel which may be correctly described as being only a miniature mosaic picture. The destructive spirit of Mahommedanism, and a long series of wars, have destroyed all evidence on the spot; and we are, therefore, thrown for indications of style on such specimens as are yet preserved in the Western Empire. How thoroughly accordant any process involving the most minute and laborious art was with the character of the Greeks may be imagined, when we know that on one mantle or tunic were represented as many as 600 figures in embroidery; and when we find St. John Chrysostom declaring, that "in his time [A.D. 400] all admiration was reserved for the embroiderers and goldsmiths."

From the glowing accounts given by Procopius of the splendour of Byzantine architecture during the reign of the Emperor Justinian, and more especially from our knowledge of the enormous sums lavished on the construction of Santa Sophia at Constantinople, we are justified in believing, that within its walls, which glowed with gold and mosaic, such a collection of utensils appropriated for the service of the Church was preserved, as the world has never since beheld.

If evidence is wanting as to the precise form of these vessels, we may, at least, gather some general impressions concerning the magnificence of the precious objects contained in that wonder of the world; since we are told that it at one time boasted no less than 6000 gold candlesticks,—2 of extraordinary importance, each weighing 100 lbs.; 24 copies of the Evangelists, with golden covers, each weighing 2 quintals;* and 7 massive gold crosses, of 1 quintal each. Amongst all this quantity of superb jewellery we may readily picture to ourselves the exquisite character of the enamels, and the elaboration of the filagree work.

It is recorded that many of these objects were directly adopted as types, both by the Spanish Moors, the Russians, the Italians, and the Persians. There appears, likewise, little reason to doubt, that as much of the architecture of India introduced by the Mahommedan conquerors was derived, through the last of the above-named people, from that of the Greeks,† so, many of those beautiful forms, and that special dexterity which makes the filagree work of the Oriental *soonar*, or goldsmith, so valuable in the present day, may be but lingering traditions of the glories of the barbaric splendour of the court of Justinian.

From Byzantium, as a centre of intelligence, diverged a succession of rays which assisted in dispelling the darkness which followed the extinction of the old Roman fire in many of the countries of Europe. The Moors, under the Abasside kaliphs, and more especially under Haroun el Raschid, obtained much of their knowledge of the polite arts from the Greeks. The great and powerful Abderahman, king of Cordova, invited a Byzantine architect to his court, when about to construct his celebrated mosque; and many fragments and representations of ancient Moorish armour, articles of personal adornment and domestic use, still attest by their style, the manifest source whence much of the ornamentation, both of ancient Saracenic and Spanish metal-work, was derived.

Throughout Russia, even in the present day, the forms and ornaments of objects both in gold, silver, and bronze, still evidence the traditions of the design and peculiar technical processes of the Greeks, more particularly in those singular enamelled diptychs, enclosing memorials of the heroes of the old martyrologies, which are sold as amulets in such abundance at the great fairs of the country. When we remember that the primitive cathedral at Kieff, the second at Novgorod, and all the principal structures at Moscow, are known to have been executed by Byzantine architects, and in direct imitation of monuments originally existing at Constantinople, we must conclude that, in metal-work and its artistic design, the Russians derived many important hints from the practice of the Eastern Empire. This conclusion is amply supported by the evidence furnished through the great national work published by the Government on the ancient arts of the country. In that splendid publication, engravings will be found of a most interesting series of objects of *vertu*, consisting of the jewellery, crowns, mitres, collars, arms, armour, and other insignia, which have been worn by the successive

* The quintal weighs about 200 lbs. avoirdupois.

† See "An Historical Essay on Architecture," by the late Thomas Hope, chapters xii. and xiii.

czars, and by the most illustrious dignitaries of the Church, and princes of the empire. In all of these the cunning of the Greek designer is predominant, and in the riches of filagree, enamel, gems set *en cabochon*, and the most refined damascening, the technical processes which, if not originated, were at least adopted by him, are incontestably stamped with that grace and perfection with which he alone could invest them.

The principal of the monuments of Byzantine ability yet remaining to excite our wonder and admiration at the mechanical dexterity which characterises them, is the celebrated "Pala d'oro," or "Paliotto," of Venice, which was made at Constantinople in the year 976, and which we shall have occasion to describe in the ensuing chapter. It serves as a precious frontal to the high altar at St. Mark's, and, although considerably damaged and repaired, it yet, in the more ancient portions, exhibits a wonderful neatness and brilliancy of execution. Tradition relates that it was made in imitation of the antependium, or altar-covering, of Santa Sophia. A small portion (formerly in the De Bruges collection) of this paliotto is now preserved in the Museum of Economic Geology in London. In the treasury of the church at Scala in the kingdom of Naples, a very splendid mitre, enriched with similar Greek enamels, still exists. It is related (*si dice*) to have been given to the convent by Saint Louis on his return from the Holy Land. In the Public Library at Sienna in Tuscany, there is an exquisite cover for a ritual, the work in which is probably the most beautiful and best preserved specimen now in existence of Byzantine filagree. It dates probably from about 1100. We have engraved (Plate XLVII.) a very graceful brooch, which originally formed a portion of the Hamilton gems, and which is now deposited in the medal-room of the British Museum.

The Greek artists in enamel worked but little, if at all, out of their own country, since traces of their handicraft, except in Russia, are very rare, and since all those articles of church decoration in metal still existing that can be clearly proved to be of Greek workmanship appear to have been executed by commission in Constantinople, and not by wandering artificers.

The principal influence exerted by the Byzantine goldsmiths on the nations of central Europe was effected through their connexion with Limoges, an influence the peculiar characteristics of which we shall indicate in connexion with the developement of the art of metal-work in France.

ITALY.

The historian Gibbon, when referring to the removal of the seat of Empire to Constantinople, has well observed, that, "like Thebes, or Babylon, or Carthage, the name of Rome might have been erased from the earth, if the city had not been animated with a vital principle, which again restored her to honour and dominion." This vital principle was, doubtless, manifested in the position which was assumed by the bishops of Rome as arbiters of the entire Christian world; since from the date of that assumption down to the era of the Reformation, contributions from the wealth of the faithful flowed in an almost uninterrupted stream into the coffers of the Roman Pontiffs. It may be well, however, to remark that, before finally depriving Rome of her former position as capital of the civilised world, the piety of Constantine had enriched her churches with an almost fabulous amount of precious metals. Could we but realise the nature and ornaments of those gifts, which took the form of crosses, chalices, patens, burettes, censers, and other vessels for ecclesiastical purposes, a considerable insight might be gained into the original types of those objects which we have reason to believe served as models from which all subsequent productions were executed; but unfortunately our principal authority, Anastasius, or rather the real author of the work which passes under his name, has regarded these offerings rather with an eye to their intrinsic value than to their merit as works of art or antiquarian authorities.

There can be no reason to doubt that the munificent gifts of Constantine were the best the age could produce; but the mere fact that the historian should have dwelt in detail upon the matter rather than upon the workmanship, justifies a belief that "Materia superabat opus,"—an impression strongly confirmed by the unique remains of early Christain art preserved in the Museo Vaticano, which consist but of a few vases, and the famous silver coffer found in 1793 on the Esquiline Hill, and figured by Visconti and d'Agincourt.

Before noticing any of the general descriptions of the magnificence of the decorations which were lavished on the sacred buildings in the more developed stages of the Church, it may be well to notice briefly, in detail, a few of the leading external features of her primitive rites and usages; and we shall thus be better enabled to realise subsequent modifications in form and arrangement.

When it is remembered, that the vessels originally used for the decoration of churches, and the administration of the Holy Sacraments, were in every case transmitted direct from Rome to the countries proselytised by her missionaries, and that those very objects furnished the models upon which the practice of Christendom during the middle ages was based, it becomes exceedingly interesting to trace as far as possible their primitive forms and uses. The most important among them were,—I. The chalice and paten, which are among the articles still retained by the Reformed Church; II. The cross, as an ancient and most holy symbol; III. The shrines, or depositaries for the relics of the saints; and IV. The ciboria, or coverings for the altar and the consecrated wafer.

I. The earliest chalices differed materially in size and shape, both from those which were made during the middle ages and those which are in common use at the present time. So long as the discipline of the Western Church permitted the communion of the faithful under two kinds, that is, both with bread and wine, the chalice, instead of having a spreading foot and a small bowl, was a large and capacious cup, corresponding, to a certain extent, with those two-handled vases which were depicted on the walls of the catacombs by the early Christians, and from which, in their peculiar symbolical mode of representation, the vine, emblematical of the Church, is represented as growing.* Historical evidence is not wanting to show that even prior to the conversion of Constantine, vessels of this description, which were supposed by the Roman

* See the figures and notices in Bosio, Aringhi, Seroux d'Agincourt, Raoul Rochette, Maitland, the Padre Marchi, &c.

prefects to have been used for purposes of libation, had increased among the persecuted Christians to such an extent as to have excited the cupidity of those magistrates.* M. the Abbé Barraud, in his interesting memoir, "Sur les Calices et les Patènes,"† has collected numerous authorities, proving the custom of multiplying the sacred vessels to a great number, and hanging them up in the churches by their handles. Thus we find in the "Liber Pontificalis," in the life of St. Silvester (A.D. 314) mention is made of forty chalices, each weighing one pound; of fifty, each weighing two pounds; and of twenty others, each weighing twenty pounds, all of solid gold, presented by Constantine the Great to the churches built by him at Rome. In the life of Leo III., mention is made of one which had been offered by Charlemagne which weighed no less than fifty-eight pounds. In the life of Gregory III. another is indicated of which the weight equalled thirty-four pounds. In the life of Leo IV. mention is made of ten great chalices suspended in a circle, and of forty others placed between the columns of the altar weighing alltogether two hundred and sixty-seven pounds. It is related in the life of Paschal I. (A.D. 817) that that Pope caused to be made for suspension in his church forty-two, of which the total weight was two hundred and thirty-one pounds.

These large chalices have now become of extreme rarity, having been entirely superseded by such as were adapted for a single recipient of the sacrament, from the end of the eleventh century, when the laity were refused participation in the cup, which previous practice had sanctioned as their right and privilege.

Of the substances of which the early chalices were made, commentators give a goodly list, including silver, copper, tin, wood, horn, glass, &c.; but wherever circumstances admitted, the example of Rome, and the canons of the Church, demanded that the bowl, at least, should be made of one or other of the precious metals.

It may be readily imagined, that while such large vessels were in use as chalices, the *patens*, or *patenæ*, which served to cover the chalice, and to receive the host, were of corresponding dimensions. They appear to have been round dishes from the earliest ages, and frequently ornamented with the sacred monograms, and other emblems. They were made in gold and silver, and occasionally of the two metals united; one serving as a rim to the other. The golden rim was often adorned with engraved gems and precious stones. Thus Bulengerus tells us,‡ that "Constantine made a paten out of the purest gold, in weight fifteen pounds, together with a tower (for the reservation of the host), and a dove (or pix, emblematic of the Holy Spirit), and adorned it with gems, hyacinths, and chrysoprases, as well as with white pearls to the number of two hundred and fifteen." The Abbé Barraud enumerates many more of even greater weight similarly decorated, from the first ages of the recognised Christian Church down at least to the death of Charlemagne, who himself presented one weighing no less than thirty pounds to the Basilica of St. Peter's at Rome. At the period when the form of the chalice was changed, the paten was diminished in size, and at the present time, while in the usage of the Reformed Church it remains a goodly dish, in that of the Roman Catholic Church it is usually made small and simple in decoration. Specimens of chalices and patens are engraved in Plates IV., XII., XXI., XXX., XXXII., XL., XLII., XLVI., and XLIX.

II. Ciampini adduces ample evidence to show the popularity of *crosses* in the time of Constantine, and there exist descriptions of their frequent fabrication in the precious metals, both as fixed and pendent ornaments in the churches of Italy and Byzantium. Sozomen, in the middle of the fifth century, mentions crosses as frequently laid upon the altars in his time; and Evagrius alludes to those in silver given by Cosroes to one of the churches of Constantinople in order that they might be fixed upon the altar. In the second Council of Nice (A.D. 786) it was resolved, that the cross as well as the images of the Blessed Virgin, the angels and saints, were to receive the lesser sort of worship (*Dulia*), not the greater (*Latria*), which was reserved for the Trinity alone. The use of the cross in processions was no doubt derived from the primitive standard of Constantine, the origin and nature of which is thus described by Ciampini,§ quoting Eusebius: "After Constantine had been commanded in a vision by night, to make a standard after the likeness of the burning cross which he had seen in the heavens at mid-day, he summoned artificers, the most skilful that could be found, and caused a precious cross to be made, and enriched with gold and jewels; which cross was surmounted with a crown, inscribed with the monogram of the Greek letters X and P intersecting one another, which letters the Emperor also wore upon his helmet. From the arms of the cross was suspended a purple banner, covered with precious stones and gold embroidery, glorious to behold." The Rev. Bernard Smith informs us "that the custom of adorning crosses with jewels continued from this time. Charlemagne, among the gifts

* Prudentius, Hym. ii. de Coronis. † Published at Caen, 1842. ‡ Lib. ii. "De Donariis Pontificum." § "De Sacris Ædificiis," &c.

which he offered to the churches in Rome, presented to the Basilica of Constantine a large jewelled cross with violet-coloured stones, which the Pope ordered to be used in litanies, according to the wish of the pious donor. The value of this cross caused it to be afterwards stolen. Pope Leo IV. caused another large one to be made in its place of the purest gold, adorned with pearls, and purple and green stones, in accordance with the ancient use of the Church of S. Mary Major, at Rome."

When St. Augustine was despatched by Gregory VI. in 597, to convert the Saxons, among the few ecclesiastical ornaments with which he provided himself to attract the admiration of the people and furnish forth the primitive services of the Church, was a silver cross; and few who remember the graphic description given by Bede of the manner in which the little company advanced into the presence of King Edwin "furnished with divine, not with magic virtue, bearing a silver cross for their banner, and the image of our Lord and Saviour painted on a board, and singing the litany," can fail to recognise the beautiful simplicity of that symbol which had been adopted as the seal of martyrdom, from the apostolic ages of the Church.

The first introduction of crucifixes was at the latter end of the seventh century (A.D. 680), when in the sixth general Council of Constantinople, it was decreed, that Christ should be painted in the form of a man upon the cross, in order that his death and passion might be set forth to the eyes of Christians in a more powerful and effective manner. Examples of crosses are engraved in Plates VIII., XVI., and XLIX.

III. The "*scrinia,*" or shrines, in which the relics of the saints were preserved were originally little more than coffins. While the worship of the faithful was confined to the celebration of their sacraments in fear and trembling in the recesses of the catacombs, the tomb of a martyred saint usually formed the altar upon which their holy rites were celebrated; clinging to the relics in death, as they had been attached to the person during life, there can be little doubt that even during the ages of the fiercest persecution, an assiduous care was shown by the surviving Christians to preserve the remains of those blessed martyrs by whose teaching the congregations had been supported, and by whose example each was in turn armed to suffer. Driven from one retreat to another, means were yet taken to translate the relics of the saints to the new place of worship, and on a rude slab placed over the coffin, the same rites were celebrated, which had been originally consummated on the actual tomb. Hence arose the practice of forming portable "scrinia," "feretories," or "reliquaries," which, on the ultimate ascendancy of the Church, were placed beneath the altar slabs of the basilicas, as they had been beneath those of the catacombs. With the increased wealth of the faithful, came the anxiety to do honour and reverence to the remains which had been hallowed in their eyes by association with the most trying incidents of those days of fear and trembling. Hence the most gorgeous receptacles were constructed to receive and to envelope the bodies, and portions of the bodies, of those who had been most venerated. No altar was considered sacred unless it was enriched by one or more of these precious "scrinia," and so permanent a hold did this original practice take upon the Church, that even up to the present hour, there is not an altar in any country under the influence of the Bishop of Rome, which cannot boast the possession of some relic of the early ages of the Church. The original type of the coffin form has never been lost sight of, and in the *chasses d'Autel,* and *Bahuts de Limoges*, of the twelfth and thirteenth centuries, as well as in the florid shrines of Cologne and Aix-la-Chapelle, and even in the Renaissance tomb of St. Sebald at Nuremberg, we meet with a strict adherence to the original form of the prototype.

It appears highly probable that an anxiety to veil these precious "scrinia," when placed beneath the altars, from the vulgar gaze, led to the execution of those gorgeous metal-work frontals to which we shall have occasion to allude, in noticing those which were designed at Milan, to conceal the resting-place of St. Ambrose; at Venice, that of St. Mark; and at Pistoia, that of St. James. Specimens of the usual varieties of reliquaries are given in Plates VIII., XIV., XXI., XXIV., XXVIII., XLIV., and XLIX.

IV. The primitive *ciborium* consisted of four columns supporting a domed roof, which covered over and protected from dust the altar and its sacred relics. On the summit of the convex or outer surface of the dome was fixed a cross; from the highest point of the concave or inner surface was suspended a chain, supporting a metal figure of a dove (emblematical of the Holy Spirit), so made as to open for the purpose of receiving the consecrated wafer which was deposited within. Between the columns were hung richly-embroidered curtains, which might be drawn so as to encircle the altar; and both from the ciborium itself and from the roof above it hung numerous lamps. The primitive ciboria were frequently constructed of the most precious marbles, occasionally of solid metal, but more frequently of other materials, entirely overlaid

with plates of gold and silver. These original altar-coverings, though denuded of their gorgeous decorations, may yet be seen in many of the most ancient churches of Italy. The peculiar domed form of the upper portion of the ciborium is supposed to have exercised a considerable influence upon the history of art; since to a desire to expand its golden vault into a vast and crowning covering for a high altar, it has been alleged we are indebted for the construction of the gorgeous dome of Santa Sophia at Constantinople, an example which has in turn excited the emulation of the architects of Ravenna, Venice, Pisa, Florence, Rome, Paris, and London. The domed altar-covering is interesting on another hand, as having supplied the type for the form of that peculiar vessel which even now bears the name of ciborium, and which has served from a very early period to the present time, in the Roman Catholic Church, for the reservation of the host. This vessel, the lower portion of which resembles that of a chalice, is invariably covered with a domed lid surmounted by a cross, and has retained in every country and up to the present time the same interesting conventional characteristics. Specimens are engraved in Plates IV., XXI., XXXII.

Neither the wars of Belisarius, nor those of Narses, or the Lombards, prevented the Roman Pontiffs from gradually heaping up more and more treasure in the Basilica of St. Peter. The Goths and Lombards were Christians; and the papal anathemas pronounced against sacrilege were equally dreaded by them and by their Byzantine opponents. Fresh accessions of offerings took place, when the policy of Charlemagne led him to obtain the support of the Pope to his somewhat doubtful title; and the following account of Anastasius, showing us the condition of St. Peter's at the commencement of the ninth century, while it conveys a strong impression of the donors' liberality, almost surpasses our belief. "The chapel," it is observed, "was preceded by a portico of twelve columns of porphyry, alabaster, and other most rare marbles, the intercolumniations being closed by a grille or railing of bronze. From this portico to the tomb of St. Peter the pavement was covered with sheets of silver of the weight of 150 lbs. The entablature surmounting the columns was enriched with bas-reliefs in silver, representing, on one side, our Saviour surrounded by his apostles, and on the other the blessed Virgin accompanied by holy women. The whole was crowned with a profusion of silver lamps and candelabra, weighing 700 lbs." The crypt in which the body of the saint had been actually deposited was even more richly decorated than the chapel which was immediately over it, and its gorgeous trappings are thus described by Dr. Batissier:*—"The railing which surrounded the tomb was made of silver, as well as the candelabra which illuminated it: the columns and arches were adorned with precious hangings and golden cherubim. On entering, the first object which presented itself was the massive cross of gold, weighing 100 lbs., given by Belisarius, who had caused his victories to be represented on it. The whole of the crypt was covered with sheets of gold by Pope Leo III., A.D. 795. For the pavement alone 453 lbs. of metal were employed. Upon these sheets were engraved different events taken from the Old and New Testament. Around the crypt there had been from very remote antiquity silver statues of the Saviour, of the apostles, SS. Peter, Paul, and Andrew, and, doubtless, of the four evangelists. Adrian I. replaced these silver statues by gold ones. The tomb itself was a work of gilt bronze, on which was erected a cross of massive gold, weighing 150 lbs., given by Constantine, who had caused an inscription commemorating the fact to be engraved upon it. These were not the only riches of this magnificent temple; the high altar of the Basilica was covered by Adrian I. with sheets of gold, weighing 597 lbs. The ciborium, at first of silver, was replaced by one of silver-gilt, ornamented with four columns of silver, the whole weighing as much as 2704¼ lbs."

It is deeply to be regretted that the devastations of the Saracens, in 846, caused the destruction of all this gorgeous collection, and that successive robberies and changes have destroyed all tangible evidence of the character of the workmanship of these primæval objects of sacred use. It is equally to be deplored, that every vestige of the ordinary types of contemporary secular metal-work should have been swept away from Italy, and that the gifts of Theodolinda, queen of the Lombards, to the cathedral of Monza, together with the crowns of Agilulph, her husband, and that of Charlemagne, should be the only relics of all the centuries intervening between the classical ages and that of the last-named sovereign.

But for the plunder which the treasury of the cathedral of Monza underwent from the French, its collection of relics of ancient Lombard skill in the fabrication of jewellery would have been invaluable. Among the most curious and interesting of the remaining objects may be mentioned what is commonly known as

* "Archæologie Nationale." Paris.

Queen Theodolinda's "Hen and Chickens," a species of tray of silver gilt, upon which is a figure of a hen surrounded by seven chickens, all busily occupied in pecking at grains of corn. The hen's eyes are made of rubies. Much speculation has been indulged in as to the purpose and symbolical meaning of this strange ornament It has been supposed by antiquarians* to represent either the arch-priest (a titular dignity without jurisdiction) "and chapter of the Church of Monza, or the seven provinces of the Lombard kingdom. The application of such allegories is most obscure; and the probability is that this gift of Queen Theodolinda was in fact only a plateau, or ornament for her banquet-table."

The iron crown of Monza has long been celebrated from its having been used as the imperial crown from at least 1311 to the coronation of Charles V. Tradition relates that it was presented to Queen Theodolinda by Gregory the Great, and that the iron plate which serves as its lining was a portion of one of the nails with which our Saviour was fixed to the cross. The outer rim which covers the iron presents some peculiar characteristics more particularly in the flowers, which are effectively, though coarsely, enamelled upon it. Unfortunately the crown of Agilulph, the form and details of which were still more interesting, and which long constituted one of the greatest curiosities of the treasury of the ancient Lombard Metropolitan Church, was removed by the French, and carried to Paris; where its existence of more than 1200 years was at last terminated, in 1804, by the robber who stole it out of the Cabinet des Médailles, and subsequently melted it down. Its loss is, however, the less to be regretted, as it is known to have undergone many very considerable reparations in the fourteenth century. The crown of Queen Theodolinda, which still exists at Monza, is remarkable more for the reliques and jewels by which it is adorned than for any merit in its execution. It, as well as that of Charlemagne, which we shall have occasion to mention in reference to French history, has hitherto been attributed to Byzantine, and not to Italian artists. Now it may be well to inquire how far this opinion is borne out by existing facts, and whether, after all, it is not probable that this crown and the majority of the objects preserved at Monza may not have been made in Italy.

Now we know that the Greek Exarchs who had been appointed by Justinian, were only expelled a short time before the conquest of Italy by Charlemagne, so that through them alone, during 300 years, we may imagine the Italian workmen abundantly supplied with models for imitation;—we know that numerous Greek workmen were constantly employed at Rome in the execution of mosaics, paintings, and other arts, and that there was therefore no scarcity of instructors;—we know that it is scarcely probable that the jealousy of the Greek government would have permitted such a jewel as a rival imperial crown to have been made within its territories: and we find no evidence of essentially Byzantine handicraft in their fabrication, with the exception of a certain quantity of filagree enamel.

One peculiarity, which may be remarked with regard to what may be called the Italian use of filagree enamel, rather corroborates the opinion to which we would incline—it is, that while in those objects which we know to have been manufactured at Byzantium the enamels covered a large surface (much as mosaic was applied), and actually constituted the object produced, where we may infer that Italian goldsmiths fabricated the article, the enamel was sparingly introduced, and set independently of the object, much as gems or pearls would be. If once we admit as a theory, what there is no reason to doubt, that it may have been the practice at Constantinople to manufacture small pieces of filagree, or "cloisonné" enamels, and export them for the purpose of being worked up as gems by the class of foreign jewellers known as "inclusores gemmarum," we have at hand a ready explanation of many anomalies, such, for instance, as the occasional, though very rare, use of cloissonné enamel in early French ecclesiastical vessels; as that existing between the setting and the enamel-work of the celebrated Alfred jewel; and that which may be traced between the rude execution of some of the Lombard goldsmiths' works and the delicate vitrified pastes which decorate them.

Thus we do not hesitate to ascribe the execution of the noble "Paliotto" of Milan to an artist of a different country from the one who carried out the gorgeous altar frontal of Venice, although the identity of the processes by which the filagree enamels were executed in both would, *primâ facie*, afford ground for a supposition that they were of common origin. These two inestimable treasures in the history of the goldsmith's art, the former representing, as we believe, the climax of perfection to which the Lombard school attained, and the latter the "trial piece" of the Greeks, merit an especial notice, and in examining the former we cannot do better than avail ourselves of the experienced and able guidance of M. Labarte.†

* Murray's "Hand-book for Northern Italy," 143.

† "Catalogue des Objets qui composent la Collection Debruge Dumenil," Paris, 1847.

In the year 835, the Archbishop Angilbert II. gave this magnificent offering to the cathedral in expiation of a profanation of the relics of St. Ambrose,—he having abstracted a tooth belonging to the saint to wear in a ring. The object consists of an altar entirely detached, standing beneath a magnificent ciborium of the same period. The front of this altar, which is covered with gold plate, jewels, and enamel, is occupied with the figures of our Blessed Lord, the twelve apostles, and six bas-reliefs relating to the life of Christ; the sides are decorated with rich crosses worked in precious stones, with blue and white enamel. The back (which with the sides is only in silver, with the more prominent parts in gold) presents a series of bas-reliefs, principally relating to the acts of St. Ambrose. Two of them are exceedingly interesting—the one showing the saint receiving the offering from Angilbert, and the other representing him as occupied in blessing the artist by whom this splendid frontal was executed, and whose name is preserved to us by the following inscription:—"V. Volvinius Magister Phaber me fecit." All the figures are worked out of plate with the hammer, and bands containing jewels and cloissonné enamels are used to separate one subject from another. This mass of gold and jewellery is still in good preservation, and testifies the advance of art by the excellency of the figures, the forms, free movements, and draperies of which, coincide with those of the ancient Lombard school of sculpture, rather than with the traditional severity of the Greek types.*

When regard is had to the promise of improvement held out by this master-work of the period, it becomes the more disappointing to find that continual internal quarrels and the wars of the Saracens and Normans had so interfered with artistic developement in Italy, that the Venetians were obliged to have recourse to Constantinople to obtain workmen sufficiently good for the purpose of providing a precious frontal, worthy of their patron saint. Although ordered as early as 976 by the Doge Orseolo, no less than 126 years elapsed before it actually adorned the high altar of St. Mark's; the design consists of numerous figures of saints and other personages, among which the most curious are those of the Doge Faliero and the Empress Irene. The various groups principally illustrate a legendary life of St. Mark. The whole are executed in filagree, by a delicate gold ribbon, the edge of which shows as a gold thread defining every line, and dividing each portion of the drapery, &c. into a little cell, into which a coloured vitreous paste is introduced. No conception can be formed of the labour which must have been bestowed in the elaboration of this extraordinary specimen of Greek enamelling. The formation of the inscriptions alone, some of which are in Greek and some in Latin, presented formidable difficulties.

The extreme fragility of such delicate work may be inferred from the fact, that the Pala, or, as it is usually called, the "Paliotto," was scarcely completed ere the work of repair began. Under Faliero in 1105, under Pietro Zani in 1209, and under Andrea Dandolo in 1345, it received reparation, embellishment, and additional ornamentation; the many canopies of Venetian Gothic surmounting the figures bearing eloquent though silent testimony to the successive innovations which have been made upon the integrity of the original design.

As a work occupying a sort of intermediate position between the Lombard style of the altar frontal of San Ambrogio and the Greek Paliotto of St. Mark's, we may notice that in the Record-room of the Chapter of the Cathedral of Citta di Castello, is still preserved the curious silver altar front presented by Celestinus II. in 1143 to his native city. D'Agincourt ascribes it to Byzantine workmen. It is richly decorated with enamel.

The two centuries succeeding that at the close of which the order was given for the magnificent Paliotto of Venice, were chiefly remarkable for their works in bronze. Although the earliest of these, the gates of San Paolo fuori le Mura at Rome,† were ordered to be supplied from Constantinople by the great Hildebrand during the Popedom of Alexander II. (1073), and although they bore the name of the Greek founder "Stauracius," it is still questionable whether the Italians received the art of casting in bronze from Germany, Sicily, or Byzantium. It is possible that these gates were specially ordered from Byzantium, not so much on account of the excellence of the Greek casting, as for the sake of the peculiar damascening, or inlaying with silver wire, which was introduced to heighten their effect, and which the Greeks at that time practised most successfully.

We know that works of bronze of a contemporary period exist at Augsburg and Merseburg in Germany,

* A careful outline engraving of the "Pala d'Oro" is given in D'Agincourt, and an elaborate coloured lithograph in Du Sommerard.

† D'Agincourt gives an elaborate series of plates illustrating the *art* of these gates, which were destroyed at the burning of the Basilica in 1824.

and that various old writers cited by the Duke Serradifalco distinctly praise the Saracens, who then partially inhabited Sicily, for their skill in working in metals; and thus it is pretty clear that the inhabitants of Sicily and Germany were both ahead of those of Italy at that period. From wherever the art might have been derived, it did not fail when once introduced to make rapid progress, and the churches of the lower part of Italy, as well as those of the Island of Sicily, boast even at the present day the possession of a greater number of works of this description than can be found in any other country. Dr. Kugler* traces their gradual improvement from the rigid Byzantine style of the centre doors of St. Mark's at Venice, through the works of Uberto and Pietro di Piacenza, who fabricated the gates of the Lateran (1198), and of Bonanno di Pisa (1180), who executed the gates of Pisa and Lucca, down to those completed at Florence by Andrea of the great family of the Pisani. The remarks made by the Doctor on this branch of art are so full and comprehensive that we venture to give them *in extenso*.

"Italian sculpture," he remarks, "appears without any substantiality until the beginning of the twelfth century. The ornamental works which were required for the decoration of churches, were principally done at Constantinople. In this style, for example, are the remarkable gates of San Paolo fuori le Mura at Rome. They were cast in Constantinople, in 1070, by 'Stauracius the Founder,' as the inscription informs us, and the doors in the Sanctuary of Monte Gargano (Kingdom of Naples, Province Capitinata), and those in St. Mark's at Venice, which are on the right side of the principal entrance to the church, were no doubt similarly executed. The latter must have been brought directly from the Church of Sta. Sophia at Constantinople. To these works may be added a considerable number of bronze doors of the eleventh and twelfth centuries, which exist in those parts of Italy in which the Byzantine influence was predominant, so that we may suppose most of them to have been partly executed abroad, and partly by Greek artists in Italy. We possess but little information concerning the majority of them. Some are only adorned with ornaments, without figures. To this class belong the principal door of St. Mark's at Venice, quite in the Byzantine style, but with Latin inscriptions; and farther, in Lower Italy and Sicily, those of the Cathedral of Amalfi (1062), those of St. Salvatore at Atrani (1087), those of the Cathedral of Salerno (about the same time), those of Canosa of the twelfth century, those of the Cathedral of Troy (two of them of the years 1119 and 1127), those of the castle chapel of Palermo, those of the Cathedral of Benevento (the Church of St. Bartolomeo also possessed bronze doors of the year 1150), those of Ravello, and those of Trani,—two of them are dated 1176, the other with the name of the artist Barisanus. The cathedral of Monreale in Sicily possessed two bronze doors, one of which is inscribed to have been cast by the above-named Barisanus, and contains twenty-eight panels of figures of apostles and saints in relief, which are distinguished by a decided dignity. The other was cast by the Pisan Bonannus in 1186. The same Bonannus cast, in 1180, a bronze door for the principal entrance of the Cathedral of Pisa, which was destroyed at the end of the sixteenth century. The execution of another which stands at the side of the cathedral, is ascribed to him. In the representations in relief in the latter, we can trace no advance in artistic developement. Still more rough and unformed are the bronze reliefs of the portal of St. Zenone at Verona, concerning the age of which nothing is known. The bronze door which leads to one of the side-chapels in the baptistery of the Lateran Basilica at Rome, is also very worthy of remark, although it only contains, in addition to engraved architectural representations, one figure in relief, but this is surrounded by very remarkable ornaments. This work was executed, according to the inscription about the beginning of the thirteenth century in the year 1219. The artists are called the brothers Hubertus and Petrus, of Placenza."

During the whole of the twelfth and thirteenth centuries considerable progress had been made in working the precious metals, and traces may be discovered of a school of goldsmiths of great ability existing at Florence, Sienna, and generally throughout Umbria, at an early period. Upon some of the few curious chalices and other objects, upon which their art was exercised, and which have survived to our days, we occasionally meet with indications designating the artist by whom they were fashioned; as Peter, the son of Nicholas, the son of Andrew, of Sienna, or Todi, or wherever the locality may have been. Unfortunately, however, such records throw but little light on the lives and customs of those who engraved them, and individual characteristics are blended in the uniformity of conventional productions. As in course of time the goldsmiths, the first artisans whose pursuit mainly allied them to art, grew into artists, they, as artists, gave

* In p. 497 of the "Kunstgeshichte." † See the ingenious hypothesis of the Duca di Serradifalco, in reference to the nationality of Bonannus.

way to the impulses which moved them, and imagination was allowed a wider field in which to create new forms and types. Happily to record the lives of such prime movers in dispelling darkness became a labour of love to those capable of admiring great men; and hence, as the brighter lights appeared, their characteristics were noted, and thus the history of early Italian art becomes very little else than a series of biographies of the different goldsmiths who successively turned painters, sculptors, engravers, &c., without altogether forgetting their original trade; and the series which commences with Giovanni di Pisa terminates only with the decline of art in the seventeenth century.

The influence of the new life thus given to art communicated itself to the products of the worker in metals to so great an extent as to almost revolutionise all preceding forms; and in order to at all realise the efforts of the great men of the middle ages to whom we shall shortly have occasion to allude, it becomes necessary to dwell briefly on the contemporary types of the ordinary objects on which their skill was exercised.

It need scarcely be observed that the Church was the great patron of the goldsmith, and that his labours for the laity were but of secondary importance as compared with those he was incessantly called upon to execute for the clergy. The humblest church boasted at least its gilt chalice with a silver bowl and enamelled foot and knop; its paten, with repoussé, or enamelled centre; its small ciborium, with niches and figures of the saints; its reliquary, with crystal sides; its thurible or censer, bristling with little turrets and traceried openings; its pix, "de opere Lemovicense;" its pax, engraved in "niello;" its burette or ampulla, of onyx or crystal set in filagree; its processional cross, with transparent enamel; its chrismatory, of refined workmanship; and its lamps and candlesticks, with lights constantly burning around the principal altars. Where episcopal dignity was involved, much greater richness was essential. No bishop was suitably equipped without a precious mitre, with delicate goldsmith's work and inlaid gems; without a pastoral staff, bearing the image of the patron saint and rich in canopies and niches; without a splendid morse or fibula, to bear upon his breast and fasten his cope or dalmatic; and a ring, set with an antique gem or stone, "en cabochon," to wear over his embroidered glove. His cathedral would have been deemed poor indeed if its chapels were not enclosed by elaborate grilles of ironwork, frequently painted and gilt; if its high altar did not boast its great ciborium, or baldacchino, and its "grande chasse," or ark, no longer a simple coffin, but a miniature cathedral, enclosing its most important relics; and if on *festa* days that high altar was not decorated with a gorgeous frontal or antependium, glowing with jewels, enamel, and niello, and embodying in a series of bas-reliefs the most important events in the legendary history of the saint to whom it was dedicated.

It was to the execution of works such as these that the principal portion of the surplus of the vast revenues of the Church was devoted, and, no doubt, in those days, when no Government securities existed, it was a highly profitable investment, since it was invariably found that the more highly decorated the shrine, the richer the offerings and the greater the devotion paid to the saint.

Let it not be imagined that because the clergy monopolised so large a share of the services of the goldsmiths, that the laity were altogether bad customers. A reference to the works of the early painters of the Siennese, Florentine, and Venetian schools, will suffice to show the splendour of the costumes habitually worn by the aristocracy, and the quantities of jewellery with which they delighted to adorn their persons. Take, for example, the courtly gallant as he is represented in a fresco by Benozzo Gozzoli, or a "tempera painting" by Gentile da Fabriano. In his berretta, or velvet cap, is stuck his "enseigne," or cognizance; around his neck is suspended a massive gold chain, with either a cross or a medallion of his patron saint attached to it; his fingers are loaded with rings; about his waist is bound his "baldrick," or jewelled girdle, through which are passed his sword and "coltello," or dagger, both with carved and gemmed handles. The trappings of the horse are scarcely less imposing than those of the cavalier. The noble Florentine dame is to the full as richly tricked out. Her luxuriant "treccia," a few coquettish curls of which are allowed to escape, is confined in a delicate caul of reticulated gold-wire, at every intersection of the threads of which a pearl or gem is set; around her brow is bound one of those exquisite gold, silver, or enamelled garlands the fabrication of which created the fame of Tomaso, the first of the Ghirlandaios; from each ear hangs a pearl; and on her neck and bosom reposes the chain which is connected with the jewels which extend down the front of her dress; from her narrow jewelled girdle are suspended her chaplet of beads, of pearl or filagree, and her rich "almoniere," or alms-bag. Money in those early days of monopolies poured in abundantly to the good citizens of Florence, Pisa, Sienna, Venice, Arezzo, Naples, &c.,

as well as to the nobles, whose hands were as free to spend their plunder as they were strong to grasp it. Such were the masters under whose patronage in Italy meagre conventionality grew into art, and such the works upon which the great "orefici" of the fourteenth and fifteenth centuries lavished their skill and ingenuity.

To resume the thread of our narrative, we find that when Vasari informs us concerning the enamels upon silver with which Giovanni di Pisa ornamented the altar at Arezzo, he ascribes the year 1286 as the date of their execution. At this distance of time it is, of course, perfectly impossible to determine whether Giovanni di Pisa was, or was not, the inventor of the art of painting silver reliefs with enamel; certain it is, that he and his pupils are found executing numerous works of this kind, and that the same process continued to be practised for more than two centuries with the greatest success, until at last it was gradually forgotten and lost.

In the history of the execution of the great altar-frontal of the Baptistery of Florence we find recorded that of nearly all the contemporary goldsmiths of that city. Some time prior to his death, in 1330, Cione, one of the best artists of his time, and father to the great Orcagnas, Andrea and Bernardo, had executed some beautiful bas-reliefs for this altar, which had been commenced in the preceding century; and on its destruction in 1366, these were found to be of sufficient merit to be retained on the new one, which latter was not completed until the year 1478, and is yet safely preserved in the "Gardaroba" of the Duomo at Florence. Upon the large statue of St. John in the centre, and the fourteen bas-reliefs representing his history, of which this monument is composed, the most celebrated sculptors and goldsmiths of the time were successively employed; and the names of Ghiberti, Orcagna, Antonio del Pollaiuolo, Andrea del Verocchio, and Bartolomeo Cenni, are sufficient guarantees for the excellency of the work. It is an interesting fact, that all the original account-books, containing the orders, agreements, sums paid, &c., for the work still exist in the Gardaroba, and may be freely inspected.* The statue of St. John was executed by Michelozzo di Bartolomeo, and although characteristic, by no means approaches in vigour and expression the portion completed by Pollaiuolo. The architecture and canopy-work of the part last executed are both sharply and cleanly finished.

Scarcely less interesting as a treasury of autographs, written with the chisel by the hands of several generations of art-workmen, is the altar of San Giacomo at Pistoia, which was both begun and finished a little earlier than that of Florence. In it we may see very nearly the same arrangement with respect to the large statue of the patron saint; and the bas-reliefs representing incidents in his life, which are arranged around it.

From its early possession of the relics of St. James, which it now shares with Compostello in Spain, the shrine and altar of Pistoia had received the costly oblations of saints and sinners. These offerings tempted the cupidity of Vanni Fucci, who carried them off, and for the crime was consigned, by Dante, at least, to the tortures of an Inferno.† In order to replace this loss it was that the execution of the existing altar-frontal and super-altar was undertaken. The earliest portion, which consists of the figures of the Apostles and a Madonna, which stands at the altar, and evidences the school of Giovanni Pisano, was presented at the close of the thirteenth century by an artist whose name has now disappeared. The "tavola" at the side of the altar, with fifteen scenes from the New Testament, was finished by Andrea di Jacopo d'Ognabene. In 1353, Giglio di Pisa finished the statue of San Giacomo, which was over the altar, in an excellent style rivalling that of Andrea Pisano. The "tavola" at the left side of the altar, containing mostly scenes from the Old Testament, was undertaken by Pietro of Florence; that on the right, with scenes from the New Testament, was carried out by Leonardo di Ser Giovanni of Florence. These are admirably designed, and correspond with the works of Andrea Orcagna, which they even occasionally surpass.

The shrine of St. Atto, and the statues which decorate it, four saints, an Annunciation, and other subjects, are partly by Pietro d'Arrigo, a German, settled at Pistoia between 1387 and 1390, and partly by Brunellesco, whose statues of the prophets are of great beauty. The later portions are enriched with elaborate Gothic

* For notices of these documents see Rumohr's "Italienische Forschungen."

† Vanni replies to the questioning of Dante:—

"I' non posso negar quel che tu chiedi:
In giu son messo tanto, perch' I' fui
Ladro alla Sagrestia de belli Arredi;
E falsamente gia fu apposto attrui."—*Inferno,* xxiv. 134, 138.

work in pinnacles, niches, canopy-work, &c. The translucid enamels upon silver are especially admirable, and those of the four Evangelists (Plate XLVII.), as well as several representing angels, are charming specimens of that graceful art. Various methods of manipulation have been adopted in working out the figures and relievos; the early are generally executed in "repoussé," or beaten up out of thin plates of silver, the latter cast and chased up. It was finished in 1398 by Nofri di Buto, a Florentine, and Atto di Pietro Braccini of Pistoia, who worked together and on the friendliest terms.

An allusion to the translucid enamels on silver which decorate the altar-frontal at Pistoia leads us naturally to the very remarkable shrine which all authors agree in citing as the most brilliant specimen of this kind of work.

The Cathedral of Orvieto contains the splendid reliquary of the "corporale di Bolsenna," a relic connected with the "miracle of Bolsena," commemorated by Raphael. It is of silver, and weighs about 400 lbs. It represents the elaborate façade of the Cathedral, is decorated with the most brilliant enamels, and was executed in the year 1338, by the famous Ugolino Veri of Sienna. It is one of those objects considered of such special sanctity as to be but rarely allowed to be exposed, and we have, therefore, only to trust for our impressions as to its beauty of design and execution to the descriptions of the Padre della Valle and the prints of d'Agincourt. It is, however, perfectly clear from the latter, that the subjects of the enamels, which principally represent the legend of the miracle and the Passion, are well composed, and, no doubt, from the extraordinary reputation they have acquired as the masterpieces of that style of decoration, equally well executed. When we remember the style of art manifested by the contemporary Limoges enamels, we must at once recognise the infinite superiority of the Italian school.

In 1345, Pietro and Paolo d'Arezzo were employed upon one of those silver heads in which the piety of the Roman Church has often enshrined the relics of saints. In this case the ornaments were executed in the most delicate enamels, and Vasari tells us that the two brothers were "the first who successfully carved and finished by chasing similar works upon a large scale."

A work of a somewhat similar class constitutes the *chef-d'œuvre* of Andrea Arditi. This silver head incloses the skull of San Zenobio, in the Cathedral of Florence, and is in its turn inclosed in a magnificent bronze *chasse* by Lorenzo Ghiberti. The workmanship of the head is exceedingly good, though not entirely free from a certain quaintness.

The interesting Cross we have engraved in Plate XVI. is valuable as illustrating the amount of skill necessary to prepare the metal for the reception of the vitreous pastes. The enamels having been dislodged by time or violence, leave the little medals beneath exposed. Those who remember the peculiar style of the bas-reliefs with which Orcagna has decorated the lower part of the Tabernacle at Or San Michele, will not hesitate to ascribe this precious relic, which is now preserved in the Museum of Economic Geology, London, to the period of the purest Italian enamel-work.

A few lines may here be profitably devoted to the history of another process, which was frequently brought to bear on the decoration of objects of sacred use, and more particularly of "paxes," or those small plates of metal which were handed round by the officiating priest to receive the kiss of peace. As we feel incompetent to convey a better general idea of the subject than was given by Mr. George Isaacs, in his lucid, though necessarily brief, notes to the Catalogue of "Works of Ancient and Mediæval Art, exhibited at the House of the Society of Arts," London, in 1850, we shall first quote them, and then follow up the subject by a few illustrative and corroboratory notices.

Mr. Isaacs remarks that "among the materials formerly employed to assist in the decoration of metal-work was one composed of an amalgam of silver and lead (or of silver, lead, and copper), blackened by the aid of sulphur, and receiving from the colour thus given to it the term *nigellum*, afterwards corrupted to *niello*. This nigellum, or niello, which was employed by the ancients—a fact not generally known—is occasionally mentioned in documents from the seventh century to the thirteenth, at which latter period it was greatly appreciated. The process used in its application was identical with one of those bestowed on enamel incrustations. The object intended to be ornamented with niello (ordinarily of silver, but sometimes of gold or copper) had incised upon it the required design, into which niello was inlaid in small grains, and afterwards fused by the action of fire, and polished. Originally, the channels in the metal were cut broadly, and of an equal depth, giving to the entire work, after the introduction of the niello, the appearance of a rude picture, the outlines only of which were formed sometimes by the metal and sometimes by the niello. Eventually, the

designs on the metal were engraved with great delicacy, and, where needful, were carefully shaded by lines. The origin of taking paper impressions from metal plates is ascribed to the practice of Finiguerra, a Florentine goldsmith, who, in the middle of the fifteenth century, was in the habit of taking impressions from plates he had engraved, for the purpose of ascertaining their fitness to receive the niello. Some few of these old impressions still exist, and equally with the plates themselves are styled '*nielli*.'"

It may be remarked, with regard to the composition of niello, that borax was of great use as assisting liquefaction under heat, and insuring adhesion. With respect to its antiquity, Anastasius, the librarian, informs us, in his life of St. Sylvester, that on the tomb of St. Peter, in the old Basilica at Rome, was raised a cross given by Constantine, of gold mosaic, weighing 150 lbs., whereon was engraved an inscription attesting the donation, "ex litteris puris nigellis in *cruce ipsa*," which Dr. Batissier* assumes as an ancient authority for niello. D'Agincourt mentions that in an inscription on a vase forming part of a toilet service of the fourth century, found in Rome in the year 1793, to which we have already alluded, the letters are engraved in the metal, in the manner called by the Italians "niello," by the Latins "nigellum."† The recipes which we have already quoted, for the manipulation of niello, from the works of Theophilus, the "Mappæ clavicula," &c., leave no doubt as to its common use in the Middle Ages. The application of niello in broad grooves, as mentioned by Mr. Isaacs, is well illustrated in a superaltare, or portable altar, formed of a slab of *jasper* on a basis of wood, the whole mounted in *silver* ornamented in niello, which was exhibited at the Society of Arts in 1850. The subjects at the four corners are the Elements, and those at the top and bottom are the Agnus Dei and the Dove. This work is an Italian production of the thirteenth century, and is in the possession of the Rev. Dr. Rock. It has formed the principal subject of an interesting paper by Mr. Albert Way on portable altars, and has been well engraved in Mr. Delamotte's work on the "Mediæval Exhibition," and in the "Journal of the Archæological Institute."

Small round "plaques," or plates, with such subjects as the busts of saints engraved upon them, having a rude attempt at shading indicated by incised lines hatched or "tratteggiate," and then filled up with niello, are common ornaments of the chalices of the early schools of Italian goldsmith's work. These small ornaments were frequently inserted, either instead of, or alternately with, gems, in the feet and knops of chalices, monstrances, &c. Their workmanship by no means equalled that subsequently bestowed upon the "paxes." In some of these latter, which Finiguerra executed, as we are told by Cellini,‡ availing himself of the designs of Antonio Pollaiuolo, a very rare excellence in composition and drawing was attained. Although many are attributed to Finiguerra, and apparently on good grounds as to style, there are only two specimens of silver paxes undoubtedly produced by him. The earliest, now in the possession of the British Museum, formerly in that of Sir Mark Sykes, was§ unquestionably executed before the year 1450, and from it no impression in sulphur or on paper is known. The second, which is now in the cabinet of the Grand Duke of Florence, was preserved in the church of San Giovanni at Florence, and for its execution the artist Finiguerra received sixty-six golden florins in the year 1452; of it both prints and sulphur impressions exist. Of the latter a very beautiful one is preserved in the Print-room of the British Museum.

It is right to notice that our national collection possesses the earliest print existing from a copper or silver plate; its drawing is beautiful, and it dates with apparent certainty from the year 1440. As a curious illustration of the mutability of fashion in matters of taste, we cannot refrain from anticipating a little in point of time, and from quoting the commencement of the second chapter of Benvenuto Cellini's "Treatise on Goldsmith's work." Speaking "of the art of working niello, and of the method of making it," he remarks, "in the year 1515, in which I devoted myself to the acquisition of the goldsmith's art, that of engraving in niello was almost entirely abandoned, and at the present time it is all but extinct among the workmen in Florence. But I, hearing continually how admirable that branch of industry had been in the days of the old artists, and especially how Maso Finiguerra, a Florentine goldsmith, had excelled in it, set myself assiduously to follow in the footsteps of that great master; and not only was I anxious to learn to engrave for niello, but to acquire the method of making the niello itself, so as to be able to work in that department of business with greater confidence."

* "Archaiologie Nationale," p. 360.

† Seroux d'Agincourt, "Histoire de l'Art par ses Monuments" (*Sculpture*). See also Visconti, "Su di Un' Antica Argenteria."—Roma, 1793, in 4to.

‡ "Trattato dell' Oreficeria, nel Prœmio."

§ Says Mr. Diamond, in his Letter to Sir Henry Ellis, printed in the "Archæologia," vol. xxxi.

The fifteenth century may with propriety be designated "the bronze age" of Italy, for during it were executed a series of works, many of which equal, if they do not surpass, the most remarkable productions of the classical ages. It is a somewhat curious phenomenon, that while theories of art continue comparatively undeveloped, gold and silver are in the ascendant; and those who are skilled in the fabrication of vessels and ornaments in those metals, are regarded as the most eminent of artificers. As a knowledge of art begins to diffuse itself, a larger field for the operation of the artist is demanded; in baser metals he can carry out ideas impracticable in the more precious; and thus to the age of gold succeeds the age of silver, and to the age of silver the age of bronze. So it was in Greece, and so, doubtless, in the best days of Rome; and thus modern Italy worked out its cycle of recurrences.

From the period at which the elements of intellect, stirred into action by the Pisani, commenced their struggle against material influences, we hear little more of works of such gorgeous though semi-barbaric splendour as the shrines and precious frontals we have lately described. The same spirit of rivalry of men who in one century contend which shall load the altar of their patron saint with the greatest weight of precious metal, in the next will be found struggling as to which shall retain the services of the most accomplished artists, and enrich the state with the noblest monuments.

We now approach this period of transition in Italy, or rather in Northern Italy; and in the next few pages we shall hope to trace the power of some of those men who, by the magic of their potent skill, could practise alchemy, and make the vulgar bronze of more intrinsic value than twice its weight in gold.

The fame of Bartoluccio Ghiberti has been obscured by that of his more fortunate pupils, his son Lorenzo Ghiberti, and Pollaiuolo surnamed il Cronaca: Vasari describes him, however, as being one of the most skilful workmen of his time, and we know that his assistance was most valuable to his son in the execution of the celebrated gates to which we shall now allude.

In the year 1401, the Company of Merchants of Florence determined upon the execution of a door in bronze, for the Baptistery of San Giovanni, to rival that of Andrea di Pisa. They determined on a competition of seven artists, each of whom was to submit a panel of the door finished in bronze, embodying a given subject,—the sacrifice of Abraham. The winner was to receive a commission for the work.

We shall now pass rapidly in review the principal of the competitors. Brunelleschi, the celebrated constructor of the dome of the cathedral at Florence, began his career as a goldsmith; and, in addition to the statuettes of the prophets we have had occasion to commend in the altar-frontal at Pistoia, he has left behind him the veritable trial-piece submitted in competition with Ghiberti. He, as well as Donatello, who was also of the seven, had the generosity to confess that their work was surpassed by that of the youthful Lorenzo Ghiberti.

Donatello was an artist whose extraordinary energy and vigour led him to excel in every department of sculpture. His works were generally carried out on a large scale, and to him belongs the honour of executing the first equestrian statue in bronze, worthy to rank with the Marcus Aurelius of antiquity, since at least the age of Constantine. It is in front of the Church of St. Anthony of Padua, that this grand statue has been placed. Vasari thus tells the story of its execution:* "It happened in that time," says he, "that the Signoria of Venice, hearing of the fame of Donatello, sent for him, in order that the memory of Gattamelata should not pass away from the city of Padua. Whereupon Donatello went there with a good-will, and made the bronze horse which is in the Piazza of San Antonio. In it he has expressed by his art most livelily the fire and quivering of the horse, and the lofty soul and courage of the rider. In it Donatello showed himself so perfect a master, in the execution of a large casting, in proportion, and in excellence, that of a truth he may be compared to every ancient artist in knowledge of movement, design, art, proportion, and diligence." The Paduans were delighted with the sculptor, and, after manifold entreaties, he was induced to remain with them for some time, and to execute for them a variety of bronzes; many of which still remain to attest the justice of all that the enthusiastic Vasari advances in his favour.

Another of the competitors distanced by Ghiberti was Giacopo della Quercia, an exquisite artist, who appears to have been so much discouraged by the result of the contest as to have subsequently abstained as far as possible from the employment of bronze, although, when quite young, he displayed great talents for working in that material.

Of the remaining artists who took part in the competition,—Nicolo d'Arezzo, Francesco da Valdambrina,

* Vasari, Vita di Donato, Scultore Fiorentino.

and Simone da Colle,—neither stood any chance by the side of those we have already noticed. Having therefore, disposed of the vanquished, we may proceed to relate the achievements of the victor, prefacing our remarks with a few words on his style as an artist.

Through all that Ghiberti executed there runs a strain of grace and beauty which has, perhaps, never been equalled. Great powers of selection of the harmonious in form and rejection of the crude and awkward are constantly in exercise, and no defects of composition or execution are passed over by the eye or hand of the sculptor. The qualities in Ghiberti's disposition we may most admire are his incessant labour to make everything as good as it could be, and his perfect sympathy with those natural laws of convention which limit and define the effects peculiar to the material with which he deals. The picture given of his mode of preparing for the competition affords an unquestionable indication of the indomitable, though quiet, power of his character. His design was studied and drawn, and altered and redrawn, and modelled and drawn again, and remodelled and altered, until the utmost simplicity and beauty were combined: then, when the casting was made, every little imperfection was smoothed down, and every tenderly-modelled surface and texture brought out, until at last the whole appeared, as Vasari says, to have been rather modelled "by a *breath*" than by casting and chasing. Never was there an artist who more perfectly understood the *finesse* of execution of which metal-work is susceptible, and, as a corollary, how clear it therefore becomes that a corresponding refinement in composition can alone be tolerated with such elaborate detail.

Dr. Kügler,* following Vasari's account, tells us that the work of Lorenzo was confessed to be the best, even by the concurrence of his competitors; and he was much indebted for this success to his previous education as a goldsmith, since his bas-relief was chased up with all the delicacy of a fine piece of jewellery. From 1402 to 1424 he was engaged upon the first gate, which involved the execution in basso-relievo of no less than twenty compositions from the New Testament, and a series of figures of the Evangelists and the four Doctors of the Church. In these, to a certain degree, he was obliged to follow the arrangement and style of his predecessor (Andrea di Pisa); however, in the execution of the principal door, which he afterwards undertook, and which occupied him until his death in 1456, he completely departed from the old style, and introduced that peculiar mixture of classic and Christian art which so highly delighted Michael Angelo. Ghiberti did not confine himself solely to working in bronze, since he acquired, in addition to the reputation he had gained in that art, the name of being not only one of the best glass painters and draughtsmen of the day, but the utmost distinction as a jeweller. Vasari† tells us of a morse he made for Pope Martin, an intaglio he set for Giovanni di Cosimo di Medici, precious mitres made for the Popes, and an infinity of exquisite specimens of delicate art full of the most graceful *concetti*.

Whilst engaged upon the first gate, Ghiberti still found time to execute several bronze statues for the exterior decoration of the church of Or San Michele at Florence. That of St. John the Baptist in 1414, the superb St. Matthew in 1419, and St. Stephen between the two periods. Two reliefs for the font in the Baptistery of St. John at Sienna also belong to the manner of this time,—one represents the baptism of Christ, the other St. John led before Herod. Immediately after the completion of the first gate, Ghiberti received a commission to execute a similar work, which was destined for the principal door of the Baptistery, the production of Andrea Pisano being moved to the second side-door. The second gate contains, in twelve large panels, scenes from the Old Testament, and surrounding them are numerous figures, heads, and highly graceful arabesque ornaments. The commission for the work was given to Ghiberti in 1424. The principal reliefs were finished in 1447. The whole was not completed until a year after his death, in 1456. Contemporary with this his greatest work, from the year 1439, Ghiberti executed the bronze sarcophagus of San Zenobio in the cathedral at Florence, which, in the reliefs representing the miracles of the saint, exhibits the same fine character of form and drapery which is to be remarked in the gates. We must also mention, as one of his works, a sarcophagus of the saints Proteus, Hyacinthus, and Nemesis, now in the Museum at Florence. This is rather ornamental than sculpturesque in style. We have engraved some few specimens of the skill of Ghiberti in Plates XI., XVIII., XXVI.

To Ghiberti, in the same direction of art, succeeded a younger master, who has also left many distinguished works for the admiration of posterity. Luca della Robbia, born about 1400, and referred to as living in 1480, was a most industrious artist. He executed many important commissions in marble and bronze, but his works in burnt-clay, to which he gave a glazed surface, are most numerous.

* "Handbuch der Kunstgeshichte."

† "Vita di Lorenzo Ghiberti."

It is not, however, to these that our sympathies must now be directed, but rather to the great work in bronze in which he has rivalled his great contemporary Ghiberti. The gates of the Sacristy of the Cathedral of Florence, executed between 1446 and 1464, contain in twelve panels the figures of the Madonna, the Baptist, the Evangelists, and the four Fathers of the Church, beside each of which are two angels. The figures "possess a simple dignity and beauty which remind us much of Ghiberti. In some points, especially in the solemn disposition of the drapery, Luca surpasses him." Such is the opinion of Dr. Kügler upon this fine specimen of metal-work. It is to be remarked, that the style of finish in the chasing of the two artists is very different. Ghiberti's is that of a jeweller, Della Robbia's that rather of a sculptor; for instance, in the little heads which project alike in each, hair which by Ghiberti would be indicated by a quantity of fine lines gracefully curving into one another, by Luca is indicated by a quantity of little masses carefully raised up and modelled so as to produce the same effect, without actually working it out.

In the celebrated bronze door executed by Sansovino, about eighty years later, for the Sacristy of St. Mark's at Venice, the manner of Luca has been very closely approached. The particular in which most advance appears to have been made in the interval which separates the two works, is the acquisition of a free command over the application of the classical conventions, which attach with propriety to the several degrees of relief, and which were founded by the ancients on profound observation and study.* A just appreciation of the skill with which Sansovino has contrasted his round and flattened modelling,—exactly apprehending the extra degree of force which is necessary to insure clearness in the main lines of the composition, in a material of so deep a colour as bronze, as contrasted with that which would be requisite to produce a corresponding effect in marble, or any luminous substance,—could not fail to prove most serviceable to those who would desire to reproduce works of similar excellence in the present day. With Sansovino closed the series of those artists who, in Italy, treated bronze in a distinctive and metallic manner. We shall presently have occasion to notice those sculptors in whom the strong developement of will, "the subjective power," induced a comparative forgetfulness of the demands of matter, or of the "object," and who, occupied solely with the idea of embodying some of their own conceptions as rapidly as possible, dashed their thoughts into clay, without especially troubling themselves whether they were to be subsequently reproduced *by others*, in marble, stone, wood, or metal. Up to the middle of the sixteenth century the artist and the workman had been one and the same, and alike honoured; hence much of the rare old excellence: after that period the artist became a patrician who designed, the workman a plebeian who executed. Hence at once arose an estrangement which gradually widened, until the artist made all his designs after some vague general model of a *beau idéal*, and the workman having only his assistance on rare occasions, dropped into a jog-trot habit of collecting stock commonplaces, which at last degenerated into a system of mannerism and copying, taking the place of design altogether, and raising up a formidable barrier to all modern progress in the Industrial Arts.

Before resuming the subject of goldsmiths' work, it may be well to glance at the more common objects in iron, brass, and bronze, the remains of which prove to us that in those days no object was sufficiently insignificant to escape artistic modification. Inclosing many private chapels in the different churches of Italy, exquisite grilles are yet to be found, evidencing the accomplishment of the smiths who executed them. In the fabrication of many of these, artists of eminence were employed. Thus, on the return in the middle of the fifteenth century of Simone, brother of the great Donatello, to Florence, after having been engaged with Antonio Filarete in the execution of the bronze door of St. Peter's at Rome, he was immediately commissioned to prepare the elaborate railing which surrounds the chapel in the Cathedral at Prato, in which the "cingola," or girdle of the Virgin, is preserved. The extremely beautiful iron grille we have engraved in Plate II., from the north transept of the Church of Sta. Croce at Florence, is probably an unique specimen of the perfection of mediæval smiths' work in Italy. It bears the date of 1371. In a similar, though not quite so perfect style, are the screens (portions of which are engraved in Plate V., figs. 1, 2, and 3) of the Chapel of the Palazzo della Signoria at Sienna, and of one of the side-chapels in the Church of the Sta. Trinita at Florence. The ironwork surrounding the tombs of the Scaligeri at Milan, introducing the *ladder* (the family cognizance), is well known: portions of it are engraved in Plate V., figs. 3, 4, and 5. In addition to the examples cited above many more might be quoted, but principally in the north of Italy. After the year 1500, a more simple style of wrought-iron railing, illustrated in Plate V., figs. 6, 7, 8, 9, and Plate XXXIII., became universal throughout the country.

* Eastlake, "Contributions to the Literature of the Fine Arts."

The pendant lamps usually destined for burning before the representations of the Madonna, saints, &c., are always exceedingly graceful objects. Those engraved from St. Mark's at Venice, Plate XXII., the Cathedral at Perugia, &c., are both simple and pleasing. The cresset lights, lamps, and rings for securing horses, which are frequently affixed to the angles of old palaces, both at Florence and Sienna,* frequently betray very elaborate design, and an execution rivalling the antique in sharpness and precision of drawing. Of locks, door-handles, and similar objects, though here and there a few good ones are to be met with, on the whole Italy cannot stand a comparison with France, Germany, or England.

The bronze knockers of Venice and Bologna have long been celebrated; a few of the best of these have been selected, and form the subjects of Plate VII. That from the Pisani Palace is the most famous of its kind, and may possibly date from the latter days of Sansovino.

Within the limits of the present work it would be impossible to condense an account of the varying skill of those masters, by whom the dies for the coinage of Italy have been cut, such as could convey any just ideas upon that most interesting subject. We can only observe, that many of them were executed both by the masters of whom we have, and we shall, make mention, and express our earnest hope that Mr. James Morant Lockyer,† or some other equally well-qualified gentleman, will shortly furnish us with the artistic history of Italy as it is recorded on the national coins and medals. We shall, however, offer a few remarks on the peculiar medals which were generally cast in brass, or beaten up out of plate, delicately chased up and finished, and then worn in the hats of the nobility, and occasionally of their immediate dependants. Many of these "enseignes" were of extreme beauty, and rivalled in perfection the antique coins from which they were imitated. On the obverse was usually the head of the distinguished individual in whose honour they were struck; on the reverse were many different representations or emblems referring to that person. Without possessing the fineness of the later coined medals, the works of this time are very frequently distinguished by a spirited lively conception, and a pleasing *naïve* rendering of ancient types, in the subjects represented. Many of those who were formerly called sculptors, were also die-sinkers and medal-makers; such was the case with Donatello and several of his scholars, Michelozzo, Vellano, Bertoldo, and others. The Veronese, Vittore Pisano, or Pisanello, was celebrated as a painter, whose pictures incline decidedly to the German style. In the latter part of his life he appears to have devoted himself exclusively to producing medals. They range in date between 1429 and 1449. The likenesses which they contain are executed with great refinement and individuality. The representations of animals, which we frequently meet with on the reverse, appear wonderfully full of life, varied, and often boldly foreshortened. One of the most distinguished of the scholars and successors of Vittore in the medal department was Matteo Pasto, also much distinguished in figures.

We may also name as excellent masters in this branch of art, who flourished about the middle of the fifteenth century, Antonio Marescotto of Ferrara; Giovanni Bolda, and Gentile Bellini, both painters in Venice; Giovanni Francesca Eugola of Parma, distinguished for his close imitation of the antique; Sperandio of Mantua, who flourished towards the close of the century, who was distinguished as a poet; and, lastly, some few artists whose works extended to the sixteenth century, and who already approached the refined developement of the time,—such as Vittore Camelio (of whom we must remark, that he was the first to cast medals in steel), the Veronese Giulio della Torre, Giovanni Maria Ponadello, and the celebrated painter Francesca Francia of Bologna (originally a goldsmith). To the above-named might be added a long list, in addition to whose recognised works many exist by unknown masters. This cursory survey, which has been principally derived from Dr. Kügler, may suffice for a branch of art possessing chiefly a local interest,—one, however, the modern gem-engraver and die-sinker would find it not without profit to study.

That style of design which is generally understood by the term Gothic, had but a short-lived existence among the Italians; since, while they were among the latest to resign themselves to its pointed and angular influence, they were the earliest to return to an imitation of the antique. Hence, in their goldsmiths' work, we have found the vessels for the service of the church long retaining their primitive Greek and Lombard Archaic type, and late to adopt the niche and canopy, the traceried openings, and pointed finials, which accompany the ordinary mediæval form of such objects; and hence it is, that during the fifteenth century, just while the chalices, ciboria, monstrances, &c., were arriving at their fully-developed state of florid Gothic, the orders, pediments, round arches, and antique ornaments crept into fashion; shrines and reliquaries grew into temples,

* See the engravings to the Architectural Society's publications.

† This gentleman possesses a collection of Italian coins of the most interesting description, and has studied the subject with zeal and ability.

pricket-candlesticks into candelabra, and every object employed in the churches gradually assumed a more secular aspect. During the period that this change was taking place, we cannot but remark an altered system in the mode of employing the talent of the goldsmith. Instead of the great works upon which he was directed to spread out his plates of metal so as to dazzle the untutored eye, his powers were concentrated upon the production of small objects, enriched with elaborate work, fitted for the enjoyment of the connoisseur, and valuable rather for the purity of the jewels, and the quality of the labour, than for weight or imposing aspect. On larger works in silver, the principal of which were basons and salvers for secular use, which were characterised as "grosseria," a less amount of attention was bestowed than on those exquisite pieces of "minuteria," in which popes, cardinals, and nobles, equally delighted. It is thus that we find a distinction made in the excellent "Trattato dell' Oreficeria" of Benvenuto Cellini, equivalent to that with which we separate silversmiths' from goldsmiths' and jewellers' work. It is to be remembered, that in the old days no such difference either in practice or in the artificial classification of guilds existed.

One of the most interesting passages in the work of Cellini is that in which he records his admiration for his great predecessors in his art; and as it takes up in some degree the thread of our narrative, we give our readers the benefit of it:—

"I will now speak of those men who, by following the principles of this art, arrived at the most noble results, such as (under the protection of Cosimo di Medici), Donatello the sculptor, Filippo di Ser Brunellesco the architect, and Lorenzo Ghiberti who executed the wonderful bronze gates of San Giovanni Batista in Florence; for these most excellent artists, all, from the beginning practised in goldsmiths' work. In company with those who have already become renowned through the pens of many worthy writers, we will also (so that they may not through the injustice of their age lose their deserved praise) mention those who followed this art only, viz. Antonio del Pollaiuolo, a most excellent goldsmith, and of such merit in the art of designing, that not only the other goldsmiths made use of his designs, but many sculptors and painters of his time obtained reputation by availing themselves of them. To him must be added Maso Finiguerra, who, adopting the designs of the aforesaid Antonio, had no rival in engraving in niello. Also Amerigo Amerighi, unsurpassed in enamelling; and Michel Agnolo da Pinzidimonte, who had no small reputation for jewel setting, and gained much praise for his workmanship, which was equally good in niello, in enamel, and in chasing: but much more famous than these were Piero, Giovanni, and Romolo del Tavolaccino, three brothers: they were unequalled for excellence of design in setting jewels in pendants and rings; they were also much esteemed for chasing, and basso-relievo. The reputation of the art was increased also by Stefano Salteregli, Zanobi del Lavacchio, and Bastiano Cennini, the latter of whom executed for a long period the coinage of the money of Florence. Piero di Nino was also a goldsmith, though he only worked in filagree, in which he excelled all; as did also Antonio di Salvi, an excellent worker of heavy plate, and Salvadore Pilli, whose skill in enamels was very great. But why have I omitted Lorenzo dalla Colpaia, and Andrea del Verrochio? the former of whom, while exercising this art, turned his attention to watchmaking, in which profession he worked with so much ability and care, that he gained the praise of the most skilful of that profession in Italy; and the latter, who, though he had practised goldsmiths' work till a mature age, was accounted singularly meritorious in sculpture.

"Not less worthy of praise than these most noble Florentine artists are some ultramontane goldsmiths, who have worked with very great skill in the art; amongst whom was Martino Fiammingo,* and although he followed the manner of his country, he had nevertheless very great taste and skill in engraving on copper with the graver, and in niello. But Martino Fiammingo is left far behind in the art of engraving by the most excellent Alberto Duro, who, not satisfying himself with engraving in niello, turned to print engraving, and with so much skill, that I believe up to this time he has not been surpassed. Of this date were also Antonio da Bologna, and Marco da Ravenna, both goldsmiths, who contended with Alberto in engraving, and gained great praise therein."

It appears singular that in the passage above quoted Benvenuto should have altogether omitted the mention of two artists of great reputation, viz. Francesco Francia, and Ambrogio Foppa, better known as Caradosso. To the last-named, however, he makes full reparation in other parts of his work. From Vasari, however, we can fortunately supply Cellini's deficiency.

* Probably Martin Schönganer, better known as Martin Schön, whose wonderful censer is a masterpiece of ornamental engraving.

Francesco Francia, so well known in his later years as a painter contemporary with Raphael, gave all his capabilities to the study of goldsmiths' work from a very early age, and according to his biographer's account, "all that ever was done in that art he did, and better than any other." This is strong praise, certainly; but there are many corroborative circumstances to confirm its justice. Unfortunately, all his best works were executed for his great patrons, the family of the Bentivogli, and perished in the troubles which subsequently befell that princely house. All those exquisite translucid enamels and delicate nielli, together with the medals and jewels, with which Francia adorned the nobles, spiritual and secular, of his native town, Bologna, have all disappeared; and we can now only imagine how perfect those productions must have been from the refinement and exquisite sentiment of his pictures.

Of the talents of Caradosso, Cellini speaks in terms of the highest admiration. As an enameller, he is honourably mentioned; but as an executant of figures in the round, beaten up out of sheets of gold or silver, and so soldered in the seams that no mark whatever could be seen, he is placed first of all.

In every variety of *minuteria*, Benvenuto remarks, "Caradosso of Milan has surpassed every goldsmith I have ever known. In the time of Popes Leo, Adrian, and Clement, he made many excellent works. This worthy artist, in addition to his talent in his profession, possessed remarkable kindness and gentleness. But still, from bestowing the greatest study and care on his works, he was never enabled to complete his commissions so quickly as those desired for whom he worked. From his love of his art, and his anxiety for fame, he was enabled to recognise how difficult it was to unite perfection with rapidity, and to gain reputation and at the same time execute a large number of works." His greatest work, a magnificent inkstand, mentioned by Sabba* as being preserved at Milan, alone occupied him, according to that author, twenty-six years, and is characterised by him as truly divine. Some of the peculiar processes practised by Cellini, and described in his treatise on goldsmiths' work, he acknowledges to have learnt from Foppa, and describes the improvements he made upon them.

Among the varieties of work, it frequently fell to the share of Caradosso, Cellini, and a few other artists, to execute, was one involving the greatest amount of dexterity and fancy. It was that of setting gems and crystal, jasper and onyx vases, in enamelled and exquisitely-chiselled mountings. We may, therefore, take occasion to note the manner in which occasion was given for this kind of work, some of the choice specimens of which are now the most valued ornaments of the principal museums and private collections of Europe. Vasari tells us,† that it was not until the popedoms of Martin V. and Paul II. that gems of any value were cut in Italy; but that from that period the art flourished, more particularly under the patronage of the great Lorenzo de Medicis, the "Magnificent." The collection of precious stones made by this prince, and by his son Piero, supplied the principal material upon which the talents of the most renowned gem-engravers of the period were employed. The principal of these were Giovanni Bernardi da Castel Bolognese, Valerio Vicentino, and Matteo del Nassaro. By them many charming objects in agate, crystal, lapis lazuli, &c., were wrought into both elegant and grotesque forms, and then consigned to artists in metal-work to be mounted in gold.

The cabinet of gems of the Grand Duke of Florence is unrivalled in the possession of a variety of these treasures of art, on which the most exquisite enamelling has been attached by the ingenious processes we have detailed by Benvenuto.

There are few works better known and more generally interesting than the Memoirs of Cellini, as related by himself; and it is from his own portrait, thus daguerreotyped by himself, that we have become so familiar with him as a man, that we are apt to almost forget his qualities as an artist.

He was born, A.D. 1500, at Florence,—at a time and in an atmosphere in which all the vices and ferocity of civilisation and barbarism were practised conjointly, without the virtues and morality of either. His life appears to have been pretty equally divided between his works of art and his exploits as a *spadassin*, or bully. That he was a passionate, and often an ill-advised man, will readily be granted by every one; but, at the same time, allowance must be made for the state of society in which he lived. It appears that he studied, as a youth, under Michael Agnelo and Antonio di Sandro at Florence. The first work of the execution of which he makes mention in his life was the buckle of a girdle in silver in basso-relievo, with cupids, masks, and foliage. After several journeys to different places he at last settled himself at Rome, in the year 1523, where he remained until the year 1537, and during that period acquired great reputation in all the various

* Ricordi, overo Ammaestramenti di Monsignor Sabba Castiglione, 1562.

† Vita di Valerio Vicentino, &c.

branches of his art. Among his most celebrated productions executed at that period were the pontifical morse of Clement VII.; a precious book-cover for the Emperor Charles V.; a chalice with the theological virtues, and several coins and various medals, for Clement VII. It was at this time, also, that, according to his own account, he acquired for Italy the art of damascening. Having obtained possession of a small Saracenic dagger, the blade of which was ornamented with inlayings in gold, he set himself busily to work, about the year 1524, until he had elaborated a process by which similar effects could be produced. Of the success ultimately attainable by his process no one can doubt who has ever had an opportunity of examining the splendid shield attributed to him in the possession of her Majesty the Queen,—an object which, if not by Cellini, is, at least, a *capo d'opera* of the Milanese school.

Vibrating frequently between Rome and Florence, Cellini contrived to execute works of importance—such as die-sinking for coins, &c.—for the Dukes of the latter city, as well as for the Popes of the former.

In consequence of his ungovernable temper and violence, he at length fell under the displeasure of the Pope; and, after having been confined nearly a year in prison in the Castle of St. Angelo, in 1537 he set out for France. Of his works, while residing in Paris under the protection of Francis I., we shall render an account in an ensuing chapter.

After a residence of five years he quitted France, having on this occasion contrived to incur the ill-will of Madame d'Estampes. From this time (1545) until his death he resided at Florence, and was engaged in making a variety of jewels and statues for the Duke of Tuscany, and more especially his large group of Perseus and Medusa. This splendid work in bronze is still to be seen in the Loggia dei Lanzi in the Grand Square of that city, and upon it his reputation as a sculptor principally rests.

A full list of all the various works he executed, of which he makes mention in his writings, is given in the Milanese edition of 1811, with references to those passages in which he elaborately describes their form and composition, and in many cases, the processes by which they were fabricated.

It is infinitely to be regretted, that of the great number of works thus enumerated but very few remain. Almost all of his jewels and *chef-d'œuvres* in silver and gold have entirely vanished, and there are not above two or three which bear the reputation of indisputable authenticity. These are,—the salt-cellar at Vienna, two jewelled cups at Florence, and a few coins and medals. It is true that several collections and museums possess pieces which are considered more or less likely to have been of Cellini's workmanship; but we must recollect that during his life there were other artists working in the same style, and, as he himself more than once confesses, at least equally skilfully.

In the British Museum is a cup, which is generally connected with the name of Benvenuto; but, unfortunately, although of marvellous execution, the whole style of the ornament would tend to assign its fabrication to a slightly later date. Cellini died in 1571, after having for more than fifty years enriched the world with the fruits of his genius.

It is scarcely possible to dismiss the subject of the position occupied by Cellini in the history of metal-working without noticing a singular coincidence which occurred in his life. In his style, in his mode of study, in his sympathies, the antique reigned supreme: to him the old traditions of Christian art were abhorrent. It may, therefore, be regarded as a curious accident, that by his very hand the precious treasures of old church-plate, which had accumulated in the possession of the Popes for centuries, on which the labours of the old masters of the craft had been bestowed as on a sacred work, and for which the oblations of the faithful had paid countless sums, were all relentlessly consigned to the melting-pot to relieve the temporary distress of the pontiff, Clement VII. The gems were torn from their filagree settings, which were all broken up: the result of the operation was a mass of pure gold, weighing no less than 200 lbs.

Doubtless, did we but possess memoirs as graphic as that of Cellini of some of his contemporaries and followers, we should find much valuable information, but, as it is, we must be content with little more than a catalogue of names.

M. Labarte notices the following Italian goldsmiths, who, preserving the traditions and the style of Cellini, distinguished themselves in the sixteenth century. The principal of these were Giovanni da Firenzuola, very skilful in the manufacture of table utensils and works properly designated *cose grosse;* Luca Agnola, a good designer, the best workman known to Cellini when he returned to Rome in 1523; Piloto, named by Vasari as very skilful; Piero, Giovanni, and Romolo del Trovalaccio, who were unequalled in the art of mounting precious stones in rings and ear-rings; Piero di Mino, famed for his works in filagree; Lautizio

di Perugia, who excelled in seal-engraving; Vicenzio Danti, who, in his youth, before devoting himself exclusively to sculpture, had produced exquisite specimens of goldsmiths' work. Nor must we omit Girolamo del Prato, the pupil and son-in-law of Caradosso, who laboured at Cremona, and was styled the Cellini of Lombardy. A wonderful piece of jewellery, which was presented by the people of Milan to Charles V. on his first entry into that city, is attributed to him. This artist was skilful in niello, and excelled in the execution of statuettes and small figures in silver, also in medallion portraits, in gold and silver, of which the resemblance was perfect. Girolamo flourished before the middle of the sixteenth century. The famous Giovanni di Bologna executed in Italy, for the Medici, bas-reliefs in gold, preserved in the cabinet of gems in the gallery at Florence, and which may be regarded as specimens of goldsmith's work of great merit."

It would be unjust, to the reputation of Italy, if we were to omit mention of that very remarkable band of artist-workmen by whom the richest and most luxurious princes and nobles of all Europe were supplied with arms and armour. With the manufacture of such objects, the names of Andrea di Ferrara and Negroli of Milan must ever be honourably associated. The richest suits of plate were frequently covered all over with the most elegant arabesques beaten up out of the steel and elaborately chased. Occasionally, their arabesques were heightened by the most refined enrichments in damascene-work of gold and silver wire. Sometimes the whole equipment was wrought in delicate flutings and polished like a mirror. In the celebrated collections of the Ambras Museum, at Vienna, the Arméria Reale, at Madrid, and the Grüne Gewolbe, at Dresden, are preserved some of the most beautiful specimens of Milanese workmanship now existing.

The name of Giovanni di Bologna must ever stand at the head of the school of sculpturesque bronze-workers to which he belonged. That school Donatello may be almost regarded to have founded, in the execution of his equestrian statue of Gattamelata, and his group of Judith and Holofernes in the Loggia dei Lanzi at Florence. Pollaiuolo's beautiful monument to Pope Innocent VIII. in St. Peter's may be in most respects regarded as a specimen referable to this school. Andrea Verocchio rivalled Donatello's greatest work by his celebrated statue of Bartolommeo Colleone, which stands in the Campo in front of the church of Santi Giovanni e Paolo at Venice. Fine it certainly is, but it wants the almost awful resolve of its great prototype. Verocchio, if in all respects he has not the credit of being a first-rate metal-founder (his own casting having failed to his infinite mortification), possessed the far higher honour of having been the instructor of Michael Angelo. This great artist, although not personally particularly interested in metal, yet exercised a very powerful influence upon its fortunes, since his genius impressed itself so forcibly upon the minds of his disciples as to determine the precise conventionalities adopted by them in working in bronze. The statue of Pope Paul III., which was modelled by Guglielmo della Porta, with, it is said, the assistance of Michael, is executed in that material, but, for aught of variety in its treatment, it might just as well have been in marble as well as the remaining figures of that celebrated monument. In the design of the fountain of the "Tartarughe" at Rome, the figures of which were modelled by Taddeo Landini, Giacomo della Porta has been more successful than Guglielmo. Another fountain, of much larger dimensions, that of the Neptune at Bologna, is certainly the most imposing work in bronze executed by Giovanni di Bologna; it was completed in the year 1564, and displays considerable ability both in design and elaboration: all its 20,000 lbs. weight of metal are, however, outweighed in value by the celebrated statuette of the Mercury by the same artist in the cabinet of bronzes at Florence. Nothing can be imagined more perfect than the idea of that winged messenger, and the exquisite manner in which it has been worked out. The exaggerated and colossal style of Michael Angelo was not well suited to be reproduced in bronze, and thus it is that this figure, in which Giovanni has boldly emancipated himself from the mannerism, if it may be so styled, of the heroic, is infinitely superior to any other work in bronze of the same period. Probably the mechanical processes of casting and finishing large bronze statues were never carried to greater perfection than by Tacca, who worked frequently in conjunction with Giovanni di Bologna. It could serve but little purpose to direct the student's attention to any of the numerous commemorative statues which swarm in the churches and piazzas of Italy; some are certainly better than others, but few of them offer any very remarkable features of excellence.*

It is rather in the minor works in bronze of the time of John of Bologna that character and merit are to be found; some of these are very pleasing, and have become objects of great demand in this and other

* Until, indeed, we come to modern days, in which the Baron Marochetti's statue to Emanuel Philibert, duke of Savoy, at Turin, has asserted unquestionable claims to the most attentive consideration.

countries. In ornamental works in bronze occasionally many pretty specimens were executed, and among the candelabra of the Roman, Venetian, and Paduan altars, much richness and beauty are to be found. In Plate III. we have engraved a small candelabrum, which, allowing for difference of scale, presents some features in common with those gigantic and superb ones executed by Riccio for the cathedral of St. Anthony at Padua and the church of the Salute at Venice.

As nothing had been more favourable to the works in metal for domestic use than the Renaissance, so nothing was more fatal for those of a religious character. These latter lost all the severity and spirit of their forms, and were made by degrees to more and more closely resemble the sacrificial vessels of antiquity. At the same time it is to be remarked that, never were more charming jewels made for personal decoration; never were those jewels in purer taste, or more elegantly adorned with little figures and enamels; never was armour enriched with more beautiful damascening; and never, in any period of the world, did the vessels for the table display more real and genuine art and luxury.

As at length came the age of the Reformation, of the religious wars, and of the Jesuits, the Popes had no time to act the part of *cognoscenti* and *virtuosos;* on the contrary, they were hardly able to maintain their position in dignity; and when at last their position became more secure, not even the talents of the Society of Jesus could recall lost art, or breathe new life into its dead bones.

Thus we find the most extraordinary stimulants resorted to, "to feign the virtue if they had it not," and fearful was the consequent waste of the base and precious metals and valuable materials of every kind. Charlatans arose who by a "bravura" of execution dazzled the eyes of those around them. A brilliant draughtsman passed for a painter; a rapid modeller, a sculptor; a pretty sketcher, an architect; and any body who could cast or stamp metal-work, a goldsmith.

The extraordinarily facile taste and invention of the Roman schools of the seventeenth century, of Bernini, Borromini, and others, as may be readily imagined, exercised a powerful influence over the design of the more elaborate metal manufacture of the period, and in the celebrated work of Giardini, the "Promptuarium Artis Argentariæ," published in 1750, the fluttering forms and draperies of the former master, and the interminably broken and crooked scroll-work of the latter, triumph in unmitigated vulgarity.

The bronzes executed by Bernini became special objects of admiration. The enormous and extraordinary baldacchino, or covering, to the altar of St. Peter's, served as a model for imitation in the cathedral at Perugia and in many of the other churches throughout Italy.

During the last century, although a considerable impulse was given by the introduction of some few mechanical contrivances to facilitate the production of elaborate work, and although quantities of gold and silver plate, bronze, and ironwork, were executed, still no very great excellence characterised the designs or objects executed in either material. Perhaps the best of all were those made for the iron hand-worked grillés, and ornamental railings which especially abound at Venice and in the principal towns of the north of Italy.

ENGLAND.

THE year 426 is memorable as being the last which witnessed the occupation of the British soil by the legions of Rome. It is true that, for nearly the whole of those 426 years, the inhabitants of this island had been more or less in a state of subjection; but even that servitude had not been without its advantages, and the Briton of the epoch of Valentinian was a very different being, as regards civilisation, from the half-naked savage described by Cæsar. Under the auspices of such men as Suetonius, Agricola, and Severus, considerable progress had been made in the arts of agriculture and architecture, as well as in working the various metals.

From the account given us by Cæsar,* the mineral riches of the country would appear to have been, if not unknown, at least but little used by the natives. It is very possible, however, from the shortness of his stay, that many of his general accounts of circumstances are but of local application. The number of those tools or weapons called celts, which have been found in almost every part of the country, and which are usually cast in brass, prove that, whether the materials of which they were made were obtained by importation or by any other means, they must at all events have existed in very considerable quantities.

Many copper coverings of shields, of various shapes, have been discovered; these are ornamented with numerous small bosses beaten up, and separated by concentric circles.† The ancient inhabitants of this island were equally proficient in working gold torques for the warriors and gorgets for the priests, and there is every reason to believe that they possessed the art of enamelling, as practised by their brethren in Gaul and Scandinavia.‡ The Romans, doubtless, introduced many skilful artificers, and taught the Britons the use of numerous tools; since it is only by such an hypothesis that discoveries like that made near Ely in 1838, where pure Roman art is found in conjunction with barbaric enamel, can be satisfactorily explained.§ This discovery is by no means an isolated instance.

In attempting to estimate the character of archaic goldsmiths' art, it will be essential that some general conclusions on the subject of enamel should be arrived at; and as we do not know that we can afford a clearer indication of the leading features of primitive enamelling than has been already given by Mr. W. H. Rogers,‖ we shall adopt his remarks. That gentleman observes, that "a profound darkness hangs over the history of this art in Europe. No annals describe, and no discoveries furnish, specimens tending to prove that the Greeks, Etrurians, or early Romans, practised it or were aware of its existence. Even authors who dedicate a portion of their works to artistic research supply nothing on the subject, and the first classical authority, in which an allusion to the process occurs, is to be found in the obscure and often-repeated passage of Philostratus, who says he had *heard* that the barbarians of the ocean were able to fuse colours upon heated brass, and that the operation rendered them as hard and durable as stone." By the people "of *the ocean*," Philostratus could only have meant to indicate the inhabitants of our island, some of the originally Asiatic tribes settled in the north of Gaul, or the Western Scandinavians. Now, with regard to the latter people, Herr Worsaae has given, as the result of his experienced labours, a conviction that they were totally unacquainted with enamel, and that of their remains discovered under so many circumstances

* "Nascitur ibi plumbum album in mediterraneis regionibus, in maritimis ferrum, sed ejus exigua est copia: ære utuntur importo."—CÆSAR, *De Bello Gallico*, lib. v. cap. xii.

† At Goodrich Court there exists one with three bosses, decorated with a lacertine ornament.

‡ See the admirable works of Professor Worsaae, and the "Guide to Northern Archæology," edited by the Earl of Ellesmere, in which numerous weapons and other objects, corresponding in style of art with the ancient British, will be found carefully figured and minutely described.

§ This vessel is described in the "Archæologia," vol. xv. It was found near Prick Willow, in the Isle of Ely; the handle was enamelled, and had the maker's name, Boduogenus.

‖ "Journal of the Archæological Association," vol. iii. p. 282.

nothing has been brought to light in opposition to such a conclusion. The Gauls, both in their defensive and peaceful pursuits, were well known to the Romans; and Pliny expatiates, in particular, on the skill of the Bituriges in the use of metals, yet he is silent with reference to enamel, of which one specimen at least, if it had been employed among them, would necessarily have been found to reward the investigator's anxiety.

"It remains to speak of the ancient Britons. Cæsar attempts to give a careful detail of their customs and religion, but makes no allusion to the art of enamelling; while no fragments, beyond four circular ornaments in the local museum at Warwick, and an analogous relic discovered in Pegge's barrow (all resembling the decoration of the Durham book, executed at the end of the seventh century), have been cited as late examples of the barbarous works mentioned by Philostratus."

"We venture to assume, upon the authority of existing memorials, that enamel as applied to metal was revived in Europe not much before the third century, after which period specimens became prevalent in the Roman empire, and especially in its provinces. Those discovered in Britain more immediately interest us. The class to which they belong has been called *champ-levé* by French antiquaries, and may be thus briefly described:—A piece of metal is made in the desired form; the proposed pattern is then traced upon it in thin lines, and the intermediate spaces sculped or tooled out for the reception of enamel, which is afterwards inserted in a powdered state and fused by the action of fire. Fibulæ so enamelled are not unfrequently found in the neighbourhood of Roman encampments, since the Roman soldiery in Britain greatly employed them. They are usually of a circular form, but occasionally exhibit that of the letter S; of such kind, two have been found in Yorkshire, and one of unusual beauty is preserved in the medal-room of the British Museum. Some are of the age of Severus, but those of later date are easily distinguishable in their designs by numerous curves and circles, well-turned scrolls, and ornaments representing Amazonian shields. The beautiful bronze vessel, discovered in one of the Bartlow-hill barrows, has been too ably described by Professor Faraday to require more than an allusion to it as the most remarkable specimen of Roman enamel ever brought to light. It may, however, be interesting to add that, on a careful analysis, that gentleman found that of the three colours it displays, the blue was the result of cobalt, and the red and green of copper."

From the character of the majority of such remains of Romano-British workmanship, there can be little doubt that British art at the end of the fifth century was but a debased imitation of that of Rome or Constantinople. At length came the Saxon invasion; the Britons were driven to a remote corner of the island, and art was forgotten in the general confusion, and in the privations to which they were exposed.

The long and obscure period of the Saxon Heptarchy is elucidated by only one contemporary author of great merit; it is from the venerable Bede that we learn the important fact, that, with the exception of some slight intercourse with Rome, the tide of civilisation, for nearly 400 years, flowed uninterruptedly from Ireland. It is true that in various parts of England a few gold ornaments have been found decorated, more or less, with pieces of red glass or rude cloisonné enamel; but these, it is to be observed, are of exactly the same manufacture as those found in the tomb of Childeric of France, and may have been importations from Rome or Byzantium. With regard, however, to other processes of jewel-working, it may be observed that the ring of Alhstan, bishop of Sherborne (A.D. 800), with many other remains which have been discovered, principally in tumuli, prove that the native art of champlevé enamelling was never altogether lost. "We also learn from the venerable Bede, that when Gregory the Great dispatched Mellitus Paulinus and others to assist Augustine in the mission of converting the Saxons, they brought with them many sacred vessels, which, no doubt, served as the primitive types from which the forms, &c., of all subsequent church-plate were derived: before 700, we find that the travelled Wilfred invited many foreign workmen to England, and was in the possession of large quantities of plate and jewels. King Oswald, in 631, is related by Alcuin to have endowed churches with every variety of goldsmiths' work; and it is remarkable, that Eddius distinctly describes costly work in gold and gems to have been executed by *inclusores gemmarum*, or jewellers, and speaks of them at that time as common and ordinary artificers. Bede mentions that Bishop Benedict, in 676, imported many sacred vessels; and from his time down to the year 800 we meet with constant accounts of most princely donations, the great majority of the component parts of which are described as having been made by native workmen."* Hence we may infer, that before the dissolution of the Heptarchy by

* From an interesting article on Saxon Jewellery by the Rev. W. Pegge, in the "Archæologia," vol. iv. p. 10.

the talents or good fortune of Egbert, the goldsmith's art was in a most flourishing state; and the *opus Anglicum*, or *Anglicanum*, in the words of an old author, was celebrated even in Italy. As to the veritable remains of this epoch, there is scarcely a single work on archæology which does not afford numerous illustrations of the spoils of the Saxon barrows: from these we find that the champlevé and opaque enamels were still in use, and that the lacertine ornaments, which the importation of Roman art had caused to disappear among the Britons, were again extensively employed.* It is still doubtful whether it is to this or to another peculiar species of enamelling that the term *opus Hibernicum* is to be referred. The variety to which we allude, and which is most commonly met with in Ireland, though occasionally in England and France,† consists of a species of mosaic executed in enamel pastes, in different colours, without any intervening strips of metal. Almost all the Irish antiquities are made in bronze with silver ornaments; these ornaments consist of lacertine patterns, executed, either by repoussé, *i.e.* beaten up from the back, or by threads of metal forced into grooves made to receive them. The enamels are often of a circular shape, and have probably been made up bit by bit and connected by a flux, which, becoming fusible at a lower temperature than that which would be requisite to liquify the various strips of enamel, binds them all together sufficiently securely to admit of the whole being ground down to an even face and polished.

We have before remarked, that the English nation was in all probability well versed in the art of the goldsmith at the time of the dissolution of the Heptarchy and the accession of Egbert. Of the encouragement afforded by Egbert himself we have little or no account, but William of Malmesbury, in his "Vita Pontificum," describes a shrine given by Ethelwolf, his son and successor, to the Abbey of Malmesbury, which "in anteriori parte ex solido argento *jactis imaginibus*, in posteriore vero *levato metallo* miracula figuravit:" he also adds, "fastigium crystallinum rex Ethelwolfus apposuit scrinio in quo nomen ejus literis aureis est legeri." Now the term "jactis imaginibus" most probably indicates "cast work," and is opposed to "levato metallo" or incised work, and from the expression "fastigium crystallinum," we are, no doubt, to understand that the crest-work was in the form of an inscription, and decorated with crystal balls. We have, moreover, contemporary evidence that Ethelwolf sent his youngest son (Alfred) to Rome, lived there himself for a whole year, and on his return married a French princess. Whether the art of filagree enamelling was introduced at this time, or in that of the great Alfred, is exceedingly uncertain, although the inscription‡ on the jewel found at Athelney, in Somersetshire, and now preserved in the Ashmolean Museum at Oxford, gives us reason to believe that it was certainly practised in England during the reign of the latter king; from that time down to the Conquest we are assured by repeated discoveries that the art, so far from degenerating, rather improved.

As it has long been a contested point among antiquarians whether the Alfred jewel may be regarded as of English or foreign execution, we shall dedicate a few lines to the subject, pointing out, firstly, the state of the art of enamelling previous to the year 870; secondly, what information is to be obtained from contemporary authors; and thirdly, what internal evidence is afforded by the jewel itself.

Firstly: Almost all the enamelled articles which can be attributed to a date prior to that of Alfred have either the *opus Hibernicum*, or the *opaque champlevé* pastes, common to all the northern nations.§ Those comparatively very rare articles which are enriched with cloisonné enamels, are for the most part found in connexion with Greek or Byzantine remains; such are the ornaments described in the thirtieth volume of the "Archæologia," which consist of Roman coins set in a border of the sealing-wax red enamel so often met with. Similar ornaments and decorations have been discovered in Denmark and Norway, and it is the opinion of the antiquaries of those countries that they were imported from Constantinople by the væringers, or body-guard of the Greek emperors, who were for the most part Danes or Saxons.

* It is by no means improbable that in such instances it was derived from Ireland, for not only at that period, but for long after it, every object of Irish art was more or less ornamented with similar lacertine figures, which are often executed in a rude species of damascening. See the Cross of Cong, the Lismore Crozier, the Caah or Cathach, the Domnach Airgid, the Meeshac, and the Leabhar Dhimma.

† The Museum of the Royal Irish Academy, the collections of Dr. Petrie, the Rev. Mr. Butler, and other distinguished Irish antiquaries, contain many admirable specimens of Hibernian enamel. A highly-interesting specimen of a similar kind of work, found in the bed of the river Witham, near Lincoln, was exhibited in the museum of the Archæological Institute held at that town. Lord Talbot de Malahide has engraved a few choice fragments found at Lagore, in the county Meath, after a drawing by the author of this work.—See vol. vi. p. 105, of the "Transactions" of the Institute.

‡ The inscription is as follows:—"✠ Aelfred mec heht gevvrcan." On the obverse is a rude portrait of the king, and on the reverse an elegant floreated ornament, both executed in cloisonné enamels. This interesting object has been minutely figured and described, both by Mr. Albert Way and Mr. Henry Shaw: the former, in vol. ii. of the "Journal of the Archæological Institute;" the latter, in his "Dresses and Decorations."

§ The ring of Ethelwolf (respecting the origin of which there is no doubt), whether it be filled in with black enamel, niello, or damascening, is unquestionably executed by the champlevé process.

From these facts it appears probable that, before the reign of the great Alfred, the native workmen did not make cloisonné enamels, and that any which may have been found in this country, and which are referable to a date prior to that epoch, were imported from the East.

Secondly, As to contemporary authorities. Asser, to whom we are indebted for almost all our information respecting Alfred, tells us that "the king continued, during his frequent wars, &c., to teach his workers in gold and artificers of all kinds." We next find him founding a monastery at Athelney, and in this monastery he collected "monks of all *kinds* from *every quarter*, and placed them therein. First he placed there, as Abbot, John the priest and monk, an old Saxon by birth; then certain priests and deacons from beyond the sea." Now we know that in Ireland, Germany, France, and Italy, the artist-monasteries were flourishing at this time; might not some of these "foreign monks" have been Italians or renegade Greeks, and have occupied their time in teaching the art of cloisonné enamelling to their Saxon companions? This hypothesis will appear less improbable when we consider,—

Thirdly, the internal evidence of the figure itself. It has all the appearance of being the work of a beginner only; the features are remarkably coarse and rude; the fingers are entirely omitted; and the drawing of the whole is exceedingly barbarous, as compared with many of the illuminated MSS. of an even earlier period.

Very different in style from this is the fibula found in Thames Street, in 1839.* There the figure is most beautifully executed, and is surrounded by the high edging of filagree specially recommended by Theophilus. Mr. Roach Smith believes it to be of the same date as the Alfred jewel, and if so, it would go far to prove that the former was but the attempt of a tyro. As to the Hamilton fibula (Plate XLVII.), now in the British Museum, the same authority tells us that nothing is known about it, but that it is believed to have been discovered in Scotland; and although there is no attempt to represent the figure, the cross and other ornaments are so beautifully drawn and executed as to make it appear to be of later date than either of the before-mentioned specimens. On the whole we feel justified in concluding, that it was just about the time of Alfred that the Saxons learnt the art of cloisonné enamel; that it was from the Eastern Empire that the art originally came, whence it was imported into this country; and that Alfred's jewel, differing as it does in many respects from contemporary Byzantine work, is most probably one of the early productions of a native artificer under the instructions of a foreign master.

Passing over Edward and Athelstan, the successors of Alfred, concerning whose patronage of the arts but little is known, we find that the following six reigns are but the history of the life of St. Dunstan, who, like St. Eloi of France, was at once a goldsmith and a royal minister.

From the period of his death, which occurred in the year 988, to the Conquest, the total absence of peace, and the incursions of the Danes, confirmed the truth of his political predictions. With regard to his skill as a goldsmith, but little tangible information is to be gleaned, although in after times he became the patron of the trade, and enjoyed the same honours in England as St. Eloi did in France. The saintly legends relate that it was while working at his forge that the enemy of man took occasion to tempt him in the form of a beautiful woman. That occurrence, however, is related to have taken place in his early life, and possibly as he grew older, his avocations of bishop and statesman left him but little time for this employment; for, unlike St. Eloi, we hear of few or no works which may be attributed to his handicraft being preserved in any of the great monasteries. Almost the only instance in which we can trace any record of the kind is the following notice of the royal property of Edward I., and respecting even that there existed many doubts:— "Unus anulus auri cum saphiro qui fuit de fabrica S^{ti}· Dunstani *ut credebatur*."† We are also informed that he made a bell, and several other things.

At this distance of time, and in the total absence of any of the original works, it is perfectly impossible to say anything respecting the artistic merit of St. Dunstan; but the very fact of the monk becoming the workman will prove that, if there were no regular artist monasteries as in France, at least the art of metal-working was not neglected in the English cloister.

The chroniclers have been exceedingly sparing of their information on the subject of our inquiry during the Danish dominion in England. Of Canute we know little or nothing, beyond the general fact that both he and his wife Emma were great benefactors to the churches,‡ and almost the only object of any note

* Engraved in vol. xxix. of the "Archæologia."

† See Topham's wardrobe account, 28 Edward I., published by the Antiquarian Society.

‡ Possibly some of the gifts consisted of jewelled tabulæ, like that presented in 969 by Aldwin, earl of the East Saxons, to the church of Ramsay.

recorded is the present made by Earl Godwin to Hardicanute, which consisted of a ship beaked "with gold, having eighty soldiers on board, every one of which had two bracelets on either arm, each weighing sixteen ounces of gold; on their left shoulder they carried a Danish axe, with an iron spear in their right hand," &c. Possibly the celebrated silver cup found near Lancaster in 1815, and described in the eighteenth volume of the "Archæologia," may be referred to somewhere about this period, more especially as Saxon and Danish coins were discovered inside. The engraved figures and ornaments, which are remarkably spirited, have the appearance of being copied from Roman pottery.

The protracted residence of Edward the Confessor at the Norman court had the effect of introducing the fashions of that country into England, and during the twenty years he sat upon the throne, the jewellery and goldsmiths' work were no doubt modified by a new impulse.

Before dismissing the subject of Saxon goldsmiths' art, we will quote the following passage from the parliamentary inventory of Charles the First's effects, as showing what were, in all probability, the characteristics of the ancient regalia:—"Queen Edith's crown, formerly thought to be of massey gold, but, upon tryall, found to be of silver gilt, enriched with garnet, foul pearl, sapphire, and some stones, weighing 50½ oz. = 16*l.* King Ellfred's crown of gold *wire-work*, sett with slight stones and two *little bells*,* weighing 79½ oz. at 3*s.* per oz. 1000*l.*" (*sic.*) As the articles themselves have been destroyed and no drawing remains, it is impossible at the present time to say with any certainty whether these crowns had any just claims to the title which they bore; however there is every probability, from the circumstances of the filagree and little bells, that they really were of *Saxon* manufacture. Our information is equally scanty respecting the reigns of the two first Williams and Henry I.; we read, indeed, that Abbot Theodwin, who died in 1070, gave to the cathedral of Ely a precious "tabula" for the altar, which is thus described in the second book of the "Liber Eliensis:"—"He also caused to be made a tabula of gold and silver and of admirable workmanship, in the middle of which was a throne with the image of *God*, and round it, in a circle, silver images, entirely gilt, and here and there zones adorned with precious stones. It was thought to be the chief of all the riches in the English kingdom."

After the death of Theodwin, the king's officers were sent to take an inventory of the plate, &c., then in possession of the abbey; but as it merely contains a dry list of chalices, thuribles, and altar-vestments, it is not worth extracting.

We are told by the great Suger, archbishop of Paris, that Henry I. was in possession of a vast number of drinking-vessels, splendidly decorated with jewels; and in the division of the treasure after his death these fell to the share of Thibaut, Stephen's brother, who gave them to certain abbeys, by whom they were sold for 400 livres to Suger himself, who was, by melting them down, enabled to complete his celebrated golden crucifix.† The reign of Stephen was far too turbulent to allow the least encouragement to the goldsmith, and at a time when almost every church was plundered, and men openly complained that "God and his saints were asleep,"‡ the smith and the armourer were far more useful to society.

During this and the ensuing reign we have some splendid specimens of the skill and design of the Norman blacksmiths on the doors of St. Alban's Abbey; St. Mary's, Leicester; and at Sempringham Church, Lincolnshire. Of such elaborate ironwork there would appear to have been two distinct styles in use; in the first, the main strap which holds the door together, and by which it is hung, is placed between two others in the form of a semicircle (Plate XXXIV.); in the other, these secondary straps take the form of flowing curves (Plate IX.), and contain the germ of those beautiful foliated hinges which we so much admire in the thirteenth and fourteenth centuries (Plate XIII.). The door is, in either case, generally edged with rather a wide band of iron going all round it.

Concerning metal-work during the reigns of Richard I. and John but little information is to be obtained: we know, however, that many of the churches were obliged to sell their plate to effect the ransom of the former. The latter was particularly fond of bedecking himself with jewellery; and more than one instance is mentioned in Matthew Paris of his anger being assuaged, or his favour obtained, by presents of this description. The loss of all these personal riches while crossing the Wash is thought to have had no small influence in hastening his death. His son Henry III. is almost the only king in our annals who loved and patronised art

* In the fibula described in the 29th volume of "Archæologia," the figure has a crown with two small appendages, which may possibly represent the bells.

† This fact is mentioned by Suger in his work, "De rebus gestis in suâ administratione."

‡ *Vide* the "Saxon Chronicle."

for its own sake, and fortunately there exist numerous rolls of expenses connected with his reign, which supply us with a superabundance of information respecting the various important works undertaken during its continuance. From them we learn that the great work of his life was the building and adorning of the Abbey of Westminster, and that his riches were lavished with a most unsparing hand upon the new shrine of Edward the Confessor, the crowning ornament of that noble building. This "Feretrum"* was begun at an early part of his reign, and was hardly completed at the time of his death. Odo, or Otho, the goldsmith, appears either to have superintended the work or lent funds for its execution; thus, in 1241, we find the king directs payment through him of a sufficient sum of money for the support of the goldsmiths working at Westminster, or, as it is elsewhere worded, "ad operationes pheretri beati Edwardi." In 1267, political troubles obliged Henry to pawn the ornaments of the shrine, and the inventory gives us a tolerably good idea of his liberality; we there find the images of gold, ornamented more or less with jewels, varying in value from 50*l.* to 300*l.*, equal to about 3000*l.*: some of them represented kings, and others angels. There was one of the Virgin and Child, worth 200*l.*, another of St. Edmund, and another of St. Peter trampling on Nero: there was a fine sapphire, worth 100*l.*; and a great cameo, in a golden case, with a golden chain, worth 200*l.*: probably this last was intended to vie with the great cameo in the Sainte Chapelle, at Paris, whither it had been brought from Constantinople by the Emperor Baldwin II. It was not until 1269 that Henry solemnly translated the body of the Saint from the old place unto the golden shrine, "quod ei paraverat." As we shall often have occasion to refer to the Rolls of Henry III., we cannot fail to be struck with the oft-repeated mention of Odo the goldsmith and his son Edward; and it consequently becomes more than a question of curiosity to ascertain what part they took in those works in connexion with which their names are so often brought forward. It appears probable that both father and son acted rather in the capacity of bankers than either of working goldsmiths, "imaginators," or painters, although from the instructions given to them from time to time, and recorded in the various rolls, it would appear, at the first glance, that they were practically engaged in all those capacities. The family was one of high antiquity and wealth, one of them having been moneyer to Edward the Confessor. The name of Odo appears in Doomsday Book as holding lands in Essex and Suffolk, probably in fee for the hereditary office of "chief moneyer," which was confirmed by Henry I. to the son of the Fitz-Odo of the Conqueror's time. The hereditary office involved the responsible duty of seeing to the preparation of the mint-dies, and superintending the purity and striking of the coin of the realm. As money-lenders and general agents it appears unquestionable, from the nature of their transactions and matrimonial alliances, that they must have driven a thriving trade.

Next in importance to the Odos, Henry's principal goldsmith appears to have been William of Gloucester. He it was who made the silver statue for the tomb of the Princess Catherine in 1257 (the year of her death). The statue has long since disappeared; but if it was anything like the original, who is described by Matthew Paris as being "facie pulcherrima," we have every reason to regret its loss. In 1264 he is ordered to find gold for the decorations of the King's Chamber, and from this roll we learn that he was a citizen of London. He also received in the 42d of Henry III. twenty marcs for making a precious cloth for the altar of the blessed Edward, and 60*s.* to repair a "turribulum" (or censer). We also read of one "Elijas Aurifaber."

The whole of Henry's munificent presents to the Abbey of Westminster have entirely disappeared; the altar-frontal, which is still preserved, demands no notice from us, as it no longer displays any of its once precious metal-work, and as the entire subject has lately been so admirably illustrated by the ability and research of Professor Donaldson, Mr. G. G. Scott, and Mr. W. Burgess.† As to Henry's bronze effigy, there is every reason to believe that it was not executed until after the death of his daughter-in-law, Eleanor, queen of Edward I., who died in 1290: for in the account of her executors, published by the Roxburghe Club, under the able editorship of that accomplished student of the arts, literature, and customs of the middle ages—the late Mr. Hudson Turner, we find one William Torel engaged upon the effigies of a king and a queen: that this king was Henry is the more probable from the fact that both the figures betray the same style of workmanship, and from the absence of any statue at all upon Edward's own tomb. And, again, in the 18th of Edward I. (1290), there is a payment made to Master Henry, of Lewes, for the iron-work of the

* See the notices given by the late lamented antiquary, Mr. Hudson Turner, in the "Roxburghe Club," 26, 27.

† In several meetings of the Royal Institute of British Architects, Session 1851–2.

tomb of King Henry. Now, if the work had been begun on Edward's return from Italy, it must have been in hand for sixteen years, which is not very probable.*

As regards the workman Torel, Mr. Turner appears disposed to believe that he was an Italian, founding his belief upon the supposition that Torel is only a corruption of Torelli, the name of the celebrated Florentine family; and that it was the opinion of Flaxman that these effigies had been executed by some of the scholars of Nicolo Pisano, who died in 1260. Mr. Turner likewise hints that he was probably the same as William the Florentine, whom we find employed as a painter in the latter years of Henry III.; but this appears, on many accounts, highly improbable.

Now it appears to us that these ingenious arguments are, after all, little more than pure conjecture. The first is disposed of by the fact that one Torel holds lands in Lincolnshire, in Doomsday Book, and in the same authority, Toroldus occurs in the accounts of Essex and Suffolk. In the "Excerpta e Rotulis finium," we find in 6th Henry III. (1222) entries respecting certain lands in Essex and Hertfordshire, belonging to one *William Torel*, whose father also, a *William Torel*, was then just dead. There appears, therefore, every reason for believing that *William Torel*, citizen of London, and artist to these two tombs, belonged to this family.

As to the assertion of Flaxman, that the style is Italian rather than native, it is disproved by the similitude of these figures to contemporary ones, which we know are of English art. The draperies are identical. There is no trace of the Giottesque type in the features; and the architectural ornaments in connexion with the effigies, such as the canopies over the heads, have all the characteristics of the English school.

The before-mentioned accounts are remarkably curious, and afford us the most complete information respecting the progress of the works. Among other things we learn that Torel executed all the large effigies of the queen, which were placed on the tombs in Lincoln Cathedral, Westminster Abbey, and the Church of the Blackfriars, London;† and that these were, first of all, modelled in wax in the usual manner. We have also the price of the metal, 1700 pounds for 21*l.* 13*s.* 8*d.*; and another account tells us that the place where the effigies were made was the burial-ground of the Abbot of Westminster. The queen's executors purchase 350 gold florins "de mercatoribus de Lucca" for the gilding. Master Thomas Hokyntone, "le charpentier," makes the hoarding and puts up the "co-operculum," which was painted by Walter of Durham, the king's painter; and, finally, William, "le pavour," makes good the paving, and Master Thomas de Leghtone, the smith, puts up the beautiful "ferramentum," which we still so much admire.

But Torel was not the *only* artist capable of casting in brass. William of Suffolk modelled (in wax) and cast most of the small images for the sides of the Lincoln and Blackfriars tombs;‡ and Master Alexander of Abingdon, and Dennynge de Reyns (possibly a Frenchman), also executed some of them in wax, although it does not appear that they were ever cast.

Time has left us but few works of art more touchingly beautiful than these two effigies in Westminster Abbey, and the more credit is due to Torel, as they appear to be rather ideal representations than true likenesses of the persons represented. We also know that Henry had several personal defects, of which we find no traces in the statue; and both he and Queen Eleanor, when they died, were far more advanced in age than a consideration of the effigies would lead us to imagine. The figures are in a species of alto-relief, and the draperies are remarkably well cast, especially that of the king, which is exceedingly broad and graceful; the eyes are not recessed as we see them in the antique. The hands are beautifully proportioned, and their action simple and dignified.

In the same abbey, not far from the effigy of Eleanor, is another metal tomb, of nearly the same date but of very different workmanship, and as it is the only one of this style of art still remaining in England, a short notice of it may not be unacceptable.

William de Valence, half-brother of Henry III., was killed by the French at Bayonne in 1296, and most probably his tomb was brought over to England along with his body, if not made in his lifetime. The latter fact is by no means improbable, since precedents for such a practice were not wanting at that period. We

* In the Pell "Records of the Exchequer," edited (in English) by T. Devon, p. xxxiv., is this entry,—"17 Edward I. To Hugh de Kendale, 116*s.* 4½*d.* for erecting a certain house in the burial-place of the Abbot of Westminster, in which the statues of Queen Eleanor and King Henry are being made." This is conclusive.

† That at Blackfriars, where the heart was buried, was probably destroyed at the Reformation. The Lincoln effigy, which covered the viscera, remained until the Great Rebellion.

‡ The Westminster tomb has shields in the panels, and therefore would not require figures.

know that in 1267 the effigy of Walter Merton, bishop of Rochester, had been made and brought into England by Magister Johannes Limovicensis, and that for its construction he was paid 40*l.* 5*s.* 5*d.* If the effigy was made during the lifetime of the Earl, it is by no means improbable that the same artist was employed in both cases.

There is, first of all, a stone altar-tomb, then a wooden box, the sides of which have been decorated with niches and statuettes; this supports a table of wood on which the effigy of the deceased is placed, and which is the only part still retaining its plating of copper. The fact of the shield being placed upon the hip, and of the surcoat being powdered with small escutcheons, instead of having the arms emblazoned all over it, is a sufficient proof of the French origin of this monument: as to the effigy itself, it is rudely carved in oak, and upon it are plated thin sheets of copper, rather less than one-sixteenth of an inch thick. The junctures of these plates are concealed by strips of filagree, so disposed as to form the hems of the garments and the joinings of the mail; that forming the surcoat is the only one at present remaining, but the positions of the others are indicated by the nails. The pillow, girdle, belt for the shield, and shield itself, are most beautifully enamelled, and amongst the colours we find a grey, of rather rare occurrence. There is a certain stiffness about the whole drawing of the figure* which gives it no small semblance to the raised statuettes so often found upon the *Bahuts* or *Coffres*, and which contrasts most unfavourably with the contemporary works of Torel.

During the whole of the reign of Edward I. and part of that of his successor, an immense quantity of Limoges work was imported into England. This may be partially accounted for by the fact that Edward at the beginning of his reign was in possession of the districts of Limousin, Saintonge, and Agenois, which had been ceded to him by treaty; and when his tomb was opened, at the beginning of the last century, the body was found dressed in royal robes, the stole of which was ornamented with quatre-foils of filagree-work, while the sceptre had the foliage and the dove covered with enamel. We also know that at this time Richardin, the "Emaileur de Londres," was living at Paris, possibly for the purpose of learning his art.

The Household Roll of the 28th Edward I., which was published under the editorship of Mr. Topham, by the Antiquarian Society, furnishes us with a very long and copious list of the quantity of plate and jewels then in the king's possession. By far the most numerous of the articles mentioned are the "scyphi," which appears to have been a common term for every sort of drinking-vessel, including both hanaps and bowls. We also find a great many "firmacula" (brooches) and "picheri." Among the curiosities is a shell (cokilla) given to the king, "per mercatores de Luk," and two spoons signed with the Paris mark, "sct. de quodam flore glegeli" (supposed to have been the fleur de lys). We also hear frequent mention of Adam Aurifaber, who on one occasion went into foreign parts to inspect a certain "capellum auri," and of his son, "Filium Ade Aurifabrum Regis," who made two silver dishes, "pro interferculis" (side-dishes). This Adam of Shoreditch appears to have been the principal goldsmith employed by Edward, for we find him on one occasion binding books to the value of 6*l.* 13*s.* 3*d.*; and again, one of his bills is preserved in the Tower, amongst the items of which is a "group in silver of a child riding upon a horse, the child being a likeness of Lord Edward, the king's son." This group was gilt, and cost seventy-two shillings. William Farringdon, goldsmith, of London, supplied the pitcher of gold, enamelled and set with precious stones, which Edward presented to his queen on the feast of the Circumcision, and it was also from him that the king and queen bought the jewellery which they gave, as presents to the nobles of their court, and offerings to their patron saints.

Edward II., although reigning but for a short time, was, we are told, very extravagant; and were the accounts of his expenses extant we should no doubt find much information: we can, however, only regret their loss, and content ourselves with noticing those works of the same period that are extant in baser materials.

It appears that bronze was used for many other purposes besides monumental figures, and a good many pots and ewers of that metal have come down to us with inscriptions in Lombardic characters; these characters are generally put on separately, in the same manner as we see in old bells. There is an ewer engraved in the "Archæological Journal" with the words "Venez lavez;" and a hunting-pot, in the fourteenth volume of the "Archæologia," has the words "Vilelmus Augetel me fecit," and above, "Je su pot de graunt honheur—viande a fere de bon saohur."

* The features and hands are particularly clumsy and coarse.

We have already seen that it was Master Thomas de Leghton who made the grille for Queen Eleanor's tomb at Westminster; and in the accounts we find him charging the expenses for its carriage from Leghton to London, and his own and his men's expenses while there. It is curious that the door of the church of Leighton Buzzard is still decorated with some very beautiful hinges, which are given in this work (Plate IX.), from a drawing of Mr. Gibson's. There can be little doubt, from the style of the details of the work, that they were executed during the same time that Master Thomas flourished, and were, no doubt, by his hand; indeed, from the time of the introduction of the pointed arch, the design of the iron-work had been gradually improving, and the doors of St. Mary's, Norwich, the Chapter House of York, the hall of Merton College, Oxford, and some specimens in Chester Cathedral, are probably among the finest examples of iron-work of any description or of any age.

All these examples consist of two parts,—firstly, the hinges from which the door is hung, and secondly, the stiffner, the use of which is to keep the boards together. The welding point is generally concealed by a bar of iron, or an ornamental leaf, and the scrolls themselves have either an angular section, or else are marked by a channel sunk between two projections, as at Merton College, Oxford (Plate XXXIV.).

With regard to those small objects in metal, which may be comprised under the general term of door-fittings, much might be said; but it is hoped that an examination of the series of illustrations of this branch of the art will furnish sufficient evidence as to the fluctuations of style in the execution of such articles.

We shall content ourselves, therefore, with quoting the able notice of the subject contained in the "Glossary," the publication of which has reflected so much credit on Mr. Parker of Oxford. It is there remarked that in mediæval monuments "the handles and knockers on doors are also made ornamental. The former, especially when of a simple character, are usually in the shape of rings with the spindle going through the centre of a circular escutcheon; but sometimes they are of other forms. Those of Early English and Decorated date are almost always rings, and they seldom have any ornament about them beyond, occasionally, a few spiral lines, arising from their being made of square bar of iron twisted; and sometimes a small flower or animal's head on each side of the end of the spindle to keep them in their places. A ring-handle on the vestry door of St. Saviour's, Southwark, of the early part of the seventeenth century, has a pair of creatures like lizards on it, with their heads next the end of the spindle, and their tails curled round the ring. When not made in the form of rings the handles are ornamented in various ways, frequently with minute patterns of tracery. The escutcheons are occasionally made with a projecting boss, or *umbo*, in the centre, and sometimes have a few branches of foliage round them; but they are more usually ornamented with a minute tracery, or with holes pierced through them in various patterns. Sometimes the whole escutcheon is cut into leaves; the end of the spindle is not unfrequently formed into a head. Leighton Buzzard Church is an example, in which it is a hand. The knocker attached to the door of Durham Cathedral for the use of those who demanded admittance, or claimed the privilege of sanctuary, still remains. It is a grotesque head holding a ring in its mouth."

We may especially direct attention to the beauty of the fittings of a door in St. George's Chapel, Windsor, (Plate XXIX.), as perfect specimens of English workmanship. Much of the good effect of many such objects is obtained by the simple method of perforating sheets of iron in patterns, and then placing them one over the other, and thus by the accumulation of geometrical or flowing forms procuring the appearance of great complexity.

In Sir F. Palgrave's very interesting publication of ancient calendars and records, we have some curious information respecting the contents of the treasury of several of our kings. The series commences with Edward II., but as there is nothing in it of any particular interest we will pass it over and come to that taken in the time of Edward III., when William of Wykeham delivered up his trust to the Bishop of Rochester. After the mention of the Regalia, the inventory proceeds to describe a number of things better suited for a museum than a treasury. Amongst them were the golden rose, given to Edward I. by the Pope,—the gauntlet worn by King John of France when taken prisoner,—and the dagger with which Edward I. was wounded at Acre; a great deal of the plate was enamelled, but most of the objects were silver gilt. Many of the cups are of jasper, crystal-glass, or still rarer substances, such as "œuf de griffon," or ostrich egg, and "noite neigre," or cocoa-nut. There are also eighteen girdles mentioned, as well as a "frountel chapellet de Parys," and "leur couronne d'or," and a girdle "de la vielle mande" (manière), which might not impossibly mean filagree-work. Edward had also a large quantity of relics and some ivory statues: his private jewels

appear to have been kept in an interior chamber of the Tower, while the regalia were contained in a chest in the treasury of the cloister of Westminster; these latter, however, were often in pawn, on one occasion to the Mayor and Commonalty of London, for as much as 4000*l.* Edward himself was continually giving presents, and in the Issue Rolls of 39th Edward III.,* we find an immense quantity of gilt and enamelled plate purchased of Thomas Hessey, goldsmith of London, for the king's use, and delivered to divers knights and others coming in the retinue of the Earl of Flanders.

The celebrated Lynn cup must be referred to this epoch, and not to that of King John of England,† according to the common tradition. It is little likely to have been of English workmanship, since the transparent enamels are separated by strips of metal in the Italian manner; and although the Italian processes appear to have been known in France, there is no authority for supposing that they were ever practised in this country. There is, probably, no specimen of English enamel more perfect than the well-known crozier of William of Wykeham, preserved in New College, Oxford. In both design and execution it manifests excellent taste, and bears no indication of any other than the national style. It has been carefully engraved in Carter's "Antient Sculpture and Painting." The celebrated Bruce Horn is probably of the same date, and is decorated in a similar manner.

With respect to the relative popularity of enamel in England, we cannot but be struck, on a perusal of the ancient jewel inventories preserved in the Exchequer Records, with the abundant and universal employment of the "eymell," as it is called, during the reigns of the Edwards; and the comparative rarity of its occurrence in later periods;—thus the inventories of the jewellery belonging to Edwards II. and III., contain the mention of probably two hundred distinct enamelled vessels, both of contemporary and "de la vieille façon," while few of the subsequent collections appear to have comprised more than some half-dozen specimens.

It appears to have been between the 17th of Edward II. and the 12th of Edward III., that the Norman-French word "eymell," or "emayllée," became converted into the English "enaymelle," and "enaymelez," as the words are thus spelt in the documents of the several periods. For example, in the "inventory of royal jewells," 17th Edward II., we find the expression, "Un poot d'or, od un tuel garni de divs escuchons eymell des armes de F^{a}nce,—od un image taille au pomel—du pois lxxii., s. l. d., du pris 2111 li. xv. d.; in that of Henry VI., we find also "a cuppe of silver of the olde makyng enameld the covcle garnysshed w^{t} lyons;" and again, 2 ewers of silver and "one gilt, that oon enamelled w^{t} tharmes of Inglond and F^{a}unce and that other w hertes:" again, much later, in inventories of the jewels of Henry VIII., "item, a chalice of golde w^{t} a patent (paten) enamyled w^{t} the Trynytye upon the patent, and Mari and John, wayinge 1oz. iiiq^{a}rts."

The tomb of Edward III., in Westminster Abbey, is a sufficient proof that the art of casting in bronze was successfully carried on by some of the scholars of Torel; and in this case the effigy is a portrait, and it is not improbable that the face was executed after a cast from life. The little figures at the sides, although of considerable merit, are by no means equal to the effigy; indeed they have too much the appearance of having been cast from wooden patterns. The panels of the lower tomb contain copper shields with the bearings in champlevé enamels, and the execution of the architectural canopy at the head of the figure is remarkably sharp and spirited.

In Canterbury Cathedral, the bronze tomb to the memory of the Black Prince bears, in point of art, some analogy to that of his father. The shields in the panels, and some of the accessories of the figure, such as the baldrick or sword-girdle, and spurs, are decorated with enamels; and the effigy itself is entirely relieved from the table on which it rests, in that respect being unlike most of the preceding ones, which are but alto-relievos.

The will, extracts from which may be found in Stothard's "Monumental Effigies," contains minute directions respecting this tomb, which was executed nearly, if not exactly, in conformity with those injunctions. Unfortunately the artist of these two figures is not known, but they are both of them, especially the Prince's, most exquisitely finished.

The next in the series are the effigies of Richard II. and his queen, Anne of Bohemia, which we know,

* Devon's "Issue Rolls," p. 62.

† It is most probable that the legend had its rise in the possible fact that the cup had once been in the possession of King John of France. This cup has been well engraved, both by John Carter in his "Antient Sculpture and Painting in England," and in Mr. Henry Shaw's "Antient Furniture."

from contemporary documents, were executed in his lifetime; for, in the eighteenth year of his reign, "Sir John Innocent paid another part of a certain indenture made between the king and Nicholas Broker and Geoffery Prest, coppersmiths of London, for the making of two images, likenesses of the king and queen, of copper and laton, gilded upon the said marble tomb."

There are other clauses in the indenture, from which we learn that they had a "patron"* of the king and queen's likenesses to work from, and accordingly the features of both the statues bear unmistakeable evidence of being portraits; that of the king, however, is by far the best, the drapery is better cast, and the execution altogether more careful: both are in a species of high relief, and have been made separately from the bronze table on which they are placed. The arms in each are deficient, as well as a large portion of the canopy and all the small side figures. The documentary evidence of the patronage afforded by this king to the goldsmiths is much the same as that of his predecessors, and generally consists of such entries as the following:†—"To Adam Thorpe, goldsmith of London, for engraving a brass seal, 1*l.* 13*s.* 4*d.*, and Richard Brok, also goldsmith of London, for the price of a cup and silver ewer, 6*l.* 16*s.*"

There are no descriptive inventories in England like the contemporary ones of the Dukes of Anjou and Orleans in France; but, in their absence, we shall not be mistaken in concluding that Richard possessed similar objects, as we know that he was much connected with France in the latter part of his reign, and that he was one of the most extravagant monarchs we have ever had. Froissart tells us how he presented the king with an illuminated book of poems, with silver-gilt clasps and bosses, and for which he received in return an hanap filled with 100 nobles, which, the historian rather naïvely observes, "were then a great service to me, and will be so as long as I live."

During the reigns of the sovereigns of the house of Lancaster, art of every description seems to have been upon the decline. The statuary of the monumental effigies gradually grew coarse in style and formal without being idealised, and the only portions which were well executed were the details of the architecture. There can be scarcely any doubt that the goldsmiths' work participated in this general debasement, though little or none remains for us to judge from, as the treasures of the Church were all dissipated at the Reformation, and the private stores melted to provide subsidies in the various revolutions; in some few, however, of the parish-churches of England a few chalices and patens are still preserved, but their style is by no means such as to make us regret the disappearance of the rest. The greatest production of the age was probably the effigy of Henry V. in the chantry at Westminster, the wooden figure of which was covered with silver plates; the head of the same material, which, we are gravely told, was quite solid, but which, in all probability, was only cast hollow, is known to have been stolen at the latter end of the reign of Henry VIII.

We have also an effigy of bronze of nearly contemporary date, namely, that of Richard Beauchamp, earl of Warwick, who died in 1435; Dugdale quotes the contract between his executors and John Essex, marbler, William Austin, founder, and Thomas Stevens, coppersmith, which is dated 13th June, 32d Henry VI. (1453): "William Austin, citizen and founder of London, covenanteth to cast and make the image of a man armed of fine latten, garnished with certain ornaments, viz. with a sword and dagger, with a garter, with a helm and crest under his head, and at his feet a bear muzzled and a griffin; perfectly made of the finest latten according to the patterns:" he was also to make of the finest latten fourteen embossed images of lords and ladies, in divers vestures called weepers; to stand in housings (niches) made about the tomb: a hearse was also to be made, to stand on the tomb above the principal image; and also certain images of angels and escutcheons of arms. It is to be regretted that this effigy, upon which no expense seems to have been spared, partakes of the general decline of art that took place about the time it was executed. It is true, that the armour and details are well worked and faithfully rendered; but the hair is very liny and feeble, and the features coarse: in fact, it is but the common type we see in all the effigies of the period. As to the weepers, the less that is said about them the better, for they are entirely out of proportion, the heads and hands being much too large, and the drapery heavy and ungraceful. Henry VI. appears to have been possessed of some valuable jewels, for, besides the regalia, we hear of a ship of gold, called the "Tiger," valued at 4000*l.* 10*s.*; there is also a lectern of silver; a tablet of gold with a jewelled image of St. George; the foot of the same tablet having twelve lions enamelled white, "somtyme given unto the king

* "Item, conť patron ad similitudines di regis et rē^{nœ} sub q̄^{a} forma iidem tenentur, item opus pfide."

† Devon's "Issues of the Exchequer." These extracts are not verbatim.

by Queen Johane." We also read of a jewel which had been bought of John Rollyngswerd, a German merchant and servant to the Archbishop of Cologne, for 2000 marcs; also a cup of gold covered with "kermery" work, and many other jewels which have nothing particular about them. The same observation will apply to the inventory of the regalia taken on the 25th of June, 1st Edward IV. This reign, however, is remarkable as being one in which the goldsmiths first obtained their charter of incorporation; for although existing as the fraternity in Henry II.'s time, when they were fined for not being legalised, and although Richard II. granted them several privileges, it was not till 1462 that they became a regular company, with the privilege of inspecting the gold and silver ware all over the realm. It is also during this reign that we find an extensive commerce carried on with Flanders, which was then the workshop of the world. It was from thence that Edward obtained much of his jewellery, and many of those illuminated manuscripts with which he formed the royal library; and, lastly, it was while on a mission to the court of Burgundy that Caxton acquired the art of printing, which he afterwards introduced into England. We also know that Edward's sister was married to the Duke of Burgundy, and the iron-work of his tomb at Windsor, which is said to have been made by Quintin Matsys, is another proof of his predilection for Flemish art. Parts of this screen and the iron-work of the door by the same artist, are given in Plates XXIX. and XXXVIII. It has been supposed by Mr. Williment, that it originally formed one side of the feretory of St. George, in which the relics of that saint were preserved; but it is far more likely that it was only a grille to preserve the tomb from injury: it is, without question, the finest piece of iron-work in England; the tracery is worked out with most surprising minuteness; while the delicacy of the parts and the finish of the execution would make it appear rather the work of the goldsmith than of the iron-worker.

As the subject of monumental brasses has been so ably and so fully treated by such writers as the Messrs. Waller, Mr. Manning of Diss, Mr. Albert Way, the Rev. T. Bowtell, and Mr. M. H. Bloxam, we shall not dwell at any length upon the details of such remains, but shall indicate only their general features as connected with the manipulation of mediæval metal-work. Of that class of interesting monuments, spite of domestic feuds, religious reformations, and official carelessness, more remain at the present day in England than in any other country of Europe.

It is impossible to say precisely when they were first introduced; but the earliest at present existing is that dedicated to the memory of Sir Roger de Trumpington, about 1290, in the church of that name near Cambridge. From that period we have an uninterrupted series down to the time of Charles II. and James II. About six others are known of nearly the same date as the Trumpington Brass, of which those at Acton in Suffolk, and Chatham in Kent, have the merit of being the best designed. The conjecture that the greatest quantity of the yellow metal, or "latten," itself was imported from Flanders is strongly supported by the fact, that it is along the eastern coast that these monuments most abound, and that it is only in those parts that the large square brasses, which are indisputably of Flemish workmanship, are to be found. Those at St. Albans, Newcastle, and Lynn, are generally considered the finest, and they can easily be distinguished from those of English manufacture, as they are made in several square pieces and afterwards joined together; whereas the latter are generally in one piece, the figures and architectural details being cut out and then inlaid in the stone. It is scarcely necessary to say, that these brasses were necessarily subjected to all the influences which the arts underwent during the periods of their execution: thus the early ones are generally simply designed, well drawn, and carefully executed. Those of the reigns of Edward III. and Richard II. are more elaborate in their imitation of nature, and yet stiffer in action and pose. From thence to the reign of Edward IV., although many very fine brasses were made, they become more mannered in style and coarser in execution. From that time to the end of the sixteenth century we find them a mere article of manufacture,—the features becoming perfectly conventional and displaying an ignorance of form and contempt for beauty worthy of the worst periods of Byzantine art.* Some few monumental brasses had the ground and armorial bearings relieved with enamel; sometimes an effect resembling that of enamel was obtained; but in the majority of cases by the substitution of a resinous cement. The earliest existing specimen and authentic instance of an enamel metal-plate being used as a memorial is of the date of 1150, and is preserved in the

* A partial revival may be noticed in many of the very late brasses, and in some executed during the reigns of Elizabeth, James I., and Charles I., the portraits are frequently engraved with much spirit. In the present day many admirable specimens have been executed as memorials by Mr. Hardman of Birmingham, from Mr. Pugin's designs, and by Messrs. Waller, and Messrs. Archer of London.

Museum at Mans, in France. It has been employed as a monumental enamel in memory of Geoffrey Plantagenet, count of Anjou, according to Stothard and Montfauçon, or, according to Sandford and Planché, of William Longsword, son of Henry II. and Fair Rosamond. It has been a theme of much contention among heralds, as fixing the date of the introduction of armorial bearings into Europe. Both in France and in England, enamel was used but sparingly in monumental brasses, for brass is not capable of sustaining the intense heat required to fuse the vitreous paste, and, therefore, either a copper plate was employed instead, or the enamel was separately executed on a thin lamina of copper, and then inlaid in the brass. Such is the case in the shield of Sir John d'Abernoun, at Stoke d'Abernoun, Surrey. At present this is the earliest enamelled brass known in England, dating from the reign of Edward II.

Many of the colleges at Cambridge and Oxford possess various pieces of plate, the dates of which must be referred to the reigns of Henry VII. and his son; but although these have no pretensions to represent the best art of the period, yet even from them we can perceive that it must have greatly degenerated, and that the design in a majority of instances was rude and clumsy. Henry VIII., however, at the latter end of his reign, appears to have invited over several of the best foreign workmen, and the execution of the works in wood and bronze in his Chapel at Westminster Abbey, and that of the stone-work in Bishop West's, in Ely Cathedral, displays a great advance as compared with the art of the preceding half century.

From the will of Henry VII., dated 1509 (which contains, like that of Edward the Black Prince, minute instructions concerning the erection of his monument), we learn that the "brass grate in the manner of a closure of coper and gilte" was then already begun, and was, no doubt, finished according to the original pattern. With regard to his directions concerning the tomb itself, which was to have been of black touchstone, with bronze effigies of the king and queen, and smaller bronze images in the Tabernacles and at the sides and ends, they appear to have been set aside, and two other designs were afterwards made, neither of which resembled the one actually executed. There was also to have been an altar table of gold plated upon wood, containing images of the Crucifixion, twelve Apostles, and sundry other saints, within certain niches: the altar was to be furnished with a "chales (chalice) of gold and another of silver, 2 pairs of silver-gilt cruetts, 4 candlesticks, 3 corporaces (if not corporals, ciboria), 6 images, probably containing relics, 1 pair of basons, and a bell and pax."

After some time spent by the king's servants in making designs and contracts, of all of which Henry VIII. disapproved, and which he ultimately upset, an agreement was at length made between the executors of Henry VII. and Peter Torrysany (Torregiano) respecting a monument, which was to consist of a species of canopy resting upon four pillars. Underneath was to be the tomb and altar, and we here find that the gold altar-table directed in the will was to be changed for one of copper-gilt, and of different design. Even this last agreement was not carried out in its integrity, since the monument, as it now stands, consists of the original grille and an altar-tomb,—the latter by Torregiano, as well as the effigies of the king and queen, the four angels at the angles, and the sides of the tomb, which are beautifully executed in gilt-bronze. The several sides contain three circular panels, on each of which are two figures of saints in bas-relief; these are executed in a grand and spirited manner. The draperies are Italian, and quite different in style and character from those of the statues belonging to the grille: the latter are very coarsely executed, and were probably made by native artists. In the south aisle of the same chapel is the tomb of the Countess of Richmond, Henry's mother, who died in 1509. The effigy, canopy, and escutcheons, are in bronze; the rest is in black touchstone. The face has all the appearance of being an excellent portrait, and the hands have evidently been modelled from the life. In this work Torregiano has proved himself a really great artist, and as a worker in bronze no unworthy rival to his great compatriots, Pollaiuolo and Verocchio. In mechanical execution and freedom of chasing it leaves nothing to be desired, and it is well worthy of the study of the bronze-worker. An effigy of the like material was made for the Earl of Derby, the last husband of the Countess, which is said to be at Ormskirk Church, Lancashire.

Another Italian, Benedetto da Rovezzano,* was also engaged upon a splendid tomb for Henry VIII. and his wife, Jane Seymour, which appears to have been very nearly completed at the time of the king's death. This was to have consisted of two recumbent effigies in bronze, and between them a statue of the king on horseback, besides a large number of other statues, some of which were to have been five feet high. All that was ever finished was sold by the Parliamentary Commissioners and melted down in the Great Rebellion.

* This artist was likewise employed by Cardinal Wolsey.

The British Museum, and the Chapter House at Westminster, each possesses a copy of the agreements entered into between Henry VII. and Abbot Islip, respecting the building of his chapel. These are bound in velvet, with enamelled bosses; the clasps and cases for the seals are silver-gilt, and very beautifully worked: but the most remarkable circumstance is, that the supporters of the coat-of-arms in the centre boss are covered with thin enamel, in the same manner that the Italian artists were wont to decorate their jewellery: the other ones are executed by the ordinary processes of champlevé. Henry, in his will, directs an image of himself, in a kneeling attitude, to be made of timber plated with fine gold,—the coat, armour, and inscription of the base of which was to be executed in enamel, and the whole to be set in the "mydds of the creste of the shrine of St. Edward." Many other instances occur of the employment of that decoration during this and the following reigns, and there is every reason to believe that, in the majority of instances, native workmen were employed.

The splendour of the Field of Cloth of Gold, where many of those who assisted bore their fortunes on their backs, and the magnificence of Wolsey,* have become proverbial. The great Cardinal's secretary, Cavendish, tells us that, besides having an enormous quantity of plate in his possession, he was in the habit of wearing silver-gilt shoes, and that whenever he went abroad a vast number of silver insignia, such as croziers, crosses, pillars, &c., were borne before him. The whole of these riches, and the greater part of those of the monasteries, went into the regal treasury, and accordingly we find the inventory of Henry VIII. to contain more riches than that of all the other kings put together. In it, of course, the regalia are the principal objects: the crown appears to have been exceedingly elegant, and consisted of crosses and fleurs-de-lis alternately; the crosses were only jewelled; but the fleurs-de-lis were both jewelled and ornamented with three images of our Saviour, one of St. George, and one of the Virgin and Child. There is also an immense number of cups, standing goblets, and bowls. Some of the articles are enamelled with the arms of France, and others with those of the Cardinal. There were also some very elaborate salt-cellars, one of them called the "Mores dance;" and a cup, on the cover of which was represented the dream of Paris, whereon were images of Paris, Jupiter, Venus, Pallas, and Juno. There is likewise an immense quantity of gold plate.

Very much of the jewellery of this date was designed by no less an artist than Holbein; and in the British Museum is a small volume containing 182 subjects for this purpose, which consist of portable reliquaries; some in the form of little books; jewellery for suspension round the neck; others in the form of initial letters; book-clasps; book-covers; girdles; chains; rings; sword-handles, and scabbards; and many

* In the interesting "Description of a Banquet at Hampton Court in the time of Cardinal Wolsey, by George Cavendish, his Gentleman Usher," we are presented with a graphic picture of the state and splendour of such entertainments, and of the lavish display of gold and silver plate made on similar occasions: "There was a cupboard made for the time," observes Cavendish, "in length of the breadth of the nether end of the same chamber, six desks high, full of gilt plate, very sumptuous and of the newest fashions, and upon the nethermost desk, garnished all with plate of clean gold, having two great candlesticks of silver and gilt, most curiously wrought, the workmanship whereof with the silver cost three hundred marks, and lights of wax as big as torches, burning upon the same. This cupboard was barred in round about that no man might come nigh it; for there was none of the same plate occupied or stirred during this feast, for there was sufficient besides. The plates that hung on the walls to give light in the chamber were of silver and gilt with lights burning in them, a great fire in the chimney, and all other things necessary for the furniture of so noble a feast. Every chamber had a bason and ewer of silver, some gilt and some parcel gilt, and some two great pots of silver in like manner, and one pot at the least with wine and beer, a bowl or goblet and a silver pot to drink beer in; a silver candlestick or two, with both white lights and yellow lights of three sizes of wax, and a staff torch, a fine manchet, and a cheat loaf of bread. Thus was every chamber furnished throughout the house, and yet the two cupboards in the two banqueting chambers not once touched." Stow tells us that at the marriage of Prince Arthur, son of Henry VII., in the hall was a triangular cupboard, five stages high, set with plate valued at 1200*l.* entirely ornamental; and in the outer chamber, where the princess dined, was another cupboard, "set with gold plate and valued at 20,000*l.*" The ordinary use of such cupboards is thus described by Harrison (time of Elizabeth): "Drink is usually filled in pots, goblets, jugs, bowls of silver, in noblemen's houses, also in fine Venice glasses of all forms; and for want of these else-where in pots of earth of sundry colours and moulds (whereof many are garnished with silver), or at the leastwise in pewter, all which, notwithstanding, are seldom set on the table; but each one, as necessity urgeth, calleth for a cup of such drinke as him listeth to have; so that when he hath tasted of it, he delivereth the cup again to some one of the standers by, who maketh it clean by pouring out the drinke that remaineth, restoreth it to the cupboard from whence he fetched the same. By this devise much idle tippling is furthermore cut off; for if the pots should continually stand at the elbow, or near the trencher, divers would always be dealing with them." In Ellis's edition of Brand's "Popular Antiquities" is the following note, describing the various drinking-vessels used in familiar life, from a work published in 1635; but all the articles were known half a century before: "Heywood, in his 'Philocothonista, or Drunkard opened, dissected, and anatomized,' says 'of drinking-cups, divers and sundry sorts we have; some of elm, some of box, some of maple, some of holly, &c. Mazers broad-mouthed, dishes, maggins, whiskins, piggins, cruizes, ale-bowls, wassell-bowls, court-dishes, tankards, cans, from a pottle to a pint, from a pint to a gill. Other bottles we have of leather, but they are most used among the shepherds and harvest people of the country; small jacks we have in many of the ale-houses of the city and suburbs, tipt with silver, besides the great black-jacks and bombards at the court, which when the Frenchmen first saw, they reported, at their return into their country, that the Englishmen used to drink out of their boots. We have, besides, cups made of horns of beasts, of cocoa-nuts, of gourds, of eggs of ostriches: others made of the shells of divers fishes brought from the Indies and other places, and shining like mother-of-pearl. Come to plate, every tavern can afford you flat-bowls, French bowls, prounet-cups, beer-bowls, beakers; and private house-holders in the city, when they make a feast to entertain their friends, can furnish their cupboards with flaggons, tankards, beer-cups, wine-bowls, some white, some parcell guilt, some guilt all over, some with covers, others without, of sundry shapes and qualities."

other objects. Most of the articles are intended to be enamelled or enriched with niello, and several of them have been engraved by Hollar. It is probable that the small model in wax with many small figures for the scabbard of Henry VIII.'s dagger, and which we afterwards find in the possession of Charles I., was designed by Holbein. The Print-room of the Museum likewise contains several larger drawings of designs by Holbein for silver plate, in the most exquisite style of the Italian Renaissance.

The arts seem to have made little or no progress during the reigns of Edward VI., Mary, and Elizabeth. It is true that, in the latter reign, we have frequent mention of jewels being given as presents; but they have nearly all disappeared, and we shall have no reason to regret their loss if the style was no better than the enamelled cover of the Prayer-book of Queen Elizabeth, lately in the possession of Mr. Farrer, where the figures are out of all proportion and the whole by no means very excellent as a work of art. The only name of any importance is that of Nicholas Hilliard, who was miniature-painter, goldsmith, and jeweller to Queen Elizabeth and James I. The following is a description given of a jewel of his manufacture in the inventory of Charles I., and from it we learn that he was also a painter in enamel. Inventory of Chas. I., Harl. 4718, p. 1291 :—"Item, a 4-fold little round golden jewell with a little pendent pearl hanging to it, which jewell on ye outside is enamelled with the battle of Bason(*sic*)fields, between King Henry ye 7 and Crook'd-Back, and on ye other side of ye jewell ye red and white rose joyn'd together upon some green ground. Within this jewel are 4 limn'd pictures, one being King Henry ye 7th, another King Henry ye 8 and his Queen Jane Seamour, and King Edward ye 6th, all without chrystals; which jewell was given to ye King by young Hilliard, by ye deceased Earl of Pembroke's means."*

It is singular that, when presents of jewellery were so much the fashion, we should have so great a scarcity of artists, and, with the exception of Hilliard, we meet with none deserving of the title except Robert Heriot, and he appears to have rather followed the profession of a banker than that of a goldsmith. Heriot is frequently confounded with Sir William Herrick, who was court goldsmith in London to James I., but of whose works we have no very authentic accounts. The Earl of Sussex was in possession, in 1583, of one pair of gilt vessels richly wrought by Derrick (query, Herrick ?), others made by Campion, and the names of Metcalfe and Martin also occur as engravers and goldsmiths.

During the reign of Charles I., that of his son, and the Commonwealth, the English school of plate-working was maintained by Van Vianen, or Viani (as he is more commonly called), and others; and in the execution of bronzes, Le Suer (a pupil of John of Bologna) and Fanelli laid the foundation of a style which was afterwards sustained by Grinling Gibbons and others. We are indebted to Le Suer for the bronze statue at Charing Cross, and a bust of Charles I. is also described in the Royal Inventory as being of his workmanship. In that document we find several mentions of portraits of James I., his queen Ann, and Charles I., executed in gold and silver; and several silver-chased pieces representing landscapes by Viano and Rosbiere. There is also a very full account of those jewels that were then considered as heir-looms and preserved in the Tower. They consist of figures, salt-cellars, spoons, ships, cups, basins, &c., executed in gold and enamelled; and many of them were evidently of very ancient date. The whole of these, with the regalia, were either sold or melted by order of the Parliamentary Commissioners to supply funds for carrying on the war against the Scots.

The Restoration brought with it but tame copies of the art of Louis XIV.; however, it produced the bronze statue of James II. in Whitehall Gardens, by Grinling Gibbons, and, from that time until the present, the history of the art of the goldsmith is little more than a blank, and may be said to have reached the depths of its degradation at the beginning of the present century.

At what period iron castings were first executed in England it is now exceedingly difficult to determine; it appears probable that Sussex was the county in which the earliest works of that nature were produced. From an interesting memoir on the ancient iron-works of that district,† by Mr. M. A. Lower, we learn, that to the wrought-iron-hooped cannon of the time of Henry VI. succeeded cast-iron, which were first manufactured at Buxted by Ralph Hoge, or Hogge, in 1543. To a period long prior to this date, however, may be ascribed several of the old "andirons," or fire-dogs, which are still to be found dispersed about the county. Many of these are engraved in Mr. Lower's memoir, and exhibit evidence of style tending to refer some among them to the reign of Edward IV. Their manufacture was continued till the gradual extinction of the Sussex iron trade in the middle of the last century. Camden gives a lively picture of the extent to which the face of the

* In the "Archæologia," vol. iii. p. 190, we are told that this jewel belonged to Horace Walpole; it is added, that it was usually worn by Henry VIII.

† Published in the second volume of the "Sussex Archæological Collections."

county was covered with furnaces:—"Full of iron mines it is," says he, "in sundry places, where for the making and founding thereof be furnaces on every side, and a huge deal of wood is yearly burnt." The adjoining counties to a certain extent participated in the commercial prosperity of Sussex, and thus it is that among the principal works executed in Kent we are enabled to refer to the cast-iron railing which surrounds St. Paul's Cathedral, and which is traditionally related to have been the first application of casting upon a scale so great as to have astonished the whole country, and to have realised what was in those days considered a large fortune for the manufacturer. Hasted,* in describing a foundry situated in the parish of Lamberhurst, states, that "it was called Gloucester furnace in honour of the Duke of Gloucester, Queen Anne's son, who, in 1698, visited it from Tonbridge Wells. The iron rails round St. Paul's Churchyard in London were cast at this furnace. They compose, perhaps, the most magnificent balustrade in the world, being of the height of 5 feet 6 inches; there are at intervals seven iron gates of beautiful workmanship, which, together with the rails, weighs 200 tons and 81 lbs., the whole of which cost 6*d.* per lb., and with other charges amounted to the sum of 11,202*l.* 0*s.* 6*d.*"

Before iron-casting became common, many park-gates and railings were executed in wrought-iron with great dexterity. Although their actual ornamentation was composed in a debased style, it was nevertheless carried out in accordance with the nature of the material, and some were even valuable as works of art. Among the most remarkable of such may be pointed out the gates at Hampton Court, and those of the Clarendon Printing Office, Oxford, engraved in Plate XLI.

From a very early period, numerous examples of decorative lead-work may be traced, and probably more specimens of the judicious and appropriate treatment of that metal are to be found in England than in any other country of Europe. We learn† that "the leaden coffins recently found under the effigies of knights in the Temple Church are most curiously decorated with work of elaborate design in low relief. Several leaden fonts ornamented with figures and foliage deserve notice; those at Llancaut and Tidenham,‡ Gloucestershire, were evidently cast in the same mould, and are supposed by Mr. Ormerod to be works of the tenth century. Leaden fonts exist also at Brookland, Dorchester, and Warborough, Oxfordshire, Wareham, Dorset, Walmsford, Northamptonshire, Chirton, Wiltshire, Childrey, Clewer, and Long Whittenham, Berkshire, and in other places. The stone font at Ashover, in Derbyshire, is ornamented with leaden figures of the apostles."

Many of the old crestings which decorated the ridges of our most important cathedrals and churches were likewise "cunningly" devised and executed in both iron and lead. Of this kind of work, that still remaining at Exeter Cathedral is probably the most interesting known specimen.

From the reign of Henry VIII. down to the end of the Jacobean period, many very curious heads of rain-water pipes were cast in lead and ornamented with devices, usually introducing the mottoes, initials, or cognizances of the family to whom the house to which they were attached belonged. Even so late as within the last fifty years elaborate cisterns were made, and in many of the old town-houses of the nobility large solid leaden chests, which have served from the early days of Sir Hugh Middleton, may be seen, covered with arabesques, cyphers, and other ornaments.

In the present day, while nothing can be more perfect than the ordinary utilitarian execution of plumbers' work, it is deservedly regarded as too ugly to be ever allowed to show its face, and it is invariably boxed up and hidden with an ingenuity which might have been better spent in redeeming its unnecessary deformity.

* Hasted's "Kent," vol. ii. p. 382.

† "A Glossary of Terms used in Grecian, Roman, Italian, and Gothic Architecture," p. 241.

‡ "Archæologia," vol. xxix. plate 3.

FRANCE.

During the five centuries which intervened between the epoch of the dominion of Julius Cæsar and that of Dagobert, historians, though leaving us ample testimony concerning the warlike skill of the Gauls and Franks, have been nearly, if not altogether, silent as to their attainments in the peaceful arts. Pliny, indeed, praises the skill of the Bituriges in working the precious metals; but we have to wait until the third century, before Philostratus informs us that the barbarians dwelling in the islands of the ocean successfully practised the art of fixing vitreous colours on heated brass. A few scattered ornaments turned up by the plough of the husbandman, or exhumed by the more laborious excavations of the antiquary, are, therefore, almost the only data upon which any description of the jewellery of the ancient Gauls can be founded. From such a source, then, we learn that the arts of embossing, engraving, and working in filagree, were by no means unknown in Gaul, and that the refined execution of the articles would put to shame many a later and more civilised age. As to the style of the art itself, it would appear to have been derived from that of their conquerors, for it is almost impossible to conceive that the protracted residence of many of the first Roman families and their dependants should have failed to exert a due and salutary influence.

However much the Gauls may have learnt from the Romans in point of design, it is still unquestionable that many technical processes of metal-working which were unknown to, or at least unpractised by, the latter people, were in constant requisition among the former. Thus, while rude champlevé enamel ornaments are very rarely found exhibiting any trace of Roman skill, those of a barbaric or archaic character abound, not only in Gaul, but in England, Ireland, Scandinavia, and all the North of Europe.

It is a curious fact that some of these processes appear to have died out, leaving no clue to the mystery of their mode of execution: thus, for instance, if we take a piece of the "opus Limoviticum" of the twelfth, thirteenth, and fourteenth centuries, we shall find, upon examination, that although two or more distinct colours are used in juxtaposition and without any intervening strip of metal, yet these colours have no definite line, and are, as it were, fused into one another. Now, in the early Gallic or Irish work (opus Gallicum, aut Hibernicum) the edges of similar colours, though equally in contact, are kept perfectly distinct, and are very often placed chequerwise. How this was effected is a problem not yet solved by antiquaries. Possibly the design was incised in the first coat of enamel extending over the whole surface of the metal, and the interstices afterwards filled up with vitreous paste of a different colour, fusible at a lower temperature; but most probably the pattern was made with separate strips of glass (like some of the Venetian work of the sixteenth century), and portions of this having been cut and polished, were fixed to the metal by means of a flux.

The frequent occurrence of relics of this sort of workmanship in the metropolitan and provincial collections of France, affords an undoubted proof of its universality; and it is by no means likely that it was altogether laid aside even in comparatively late times, since we find it mentioned as being employed as a common decoration in the works of St. Eloi, in the seventh century. The fact that this prince of goldsmiths,—this St. Dunstan of France,—was born near Limoges, and that it was in that city that he received his artistic education, induces us to direct our attention to that remarkable locality.

When the once-victorious legions retired little by little from the ever-increasing number and discipline of their barbarian foes, they appear to have carried all arts and all learning with them from the province in which they had so long sojourned. Limoges, however, stands forth, almost alone, as a bright spot in the dark waste of ignorance. Famed even in Cæsar's time for her manufactures in the precious metals, she still continued to work on, and preserved those traditions which ultimately made the name of Eligius synonymous with that of a skilful workman. No doubt many of those bracelets, and those collars, of the beauty of which

we have already spoken, proceeded from her workshops; but unfortunately no clear proof exists upon this head. With still less probability can we claim for her the credit of the sword and ornaments found in the tomb of Childeric at Tournay; for both these, as well as the vase and plateau discovered at Gourdon, were accompanied with medals of the Byzantine Emperors, and the enamels with which they were decorated betray the same Eastern origin.

Gregory of Tours has furnished us with several descriptions of objects in gold and silver; but as these are for the most part exceedingly vague, and merely inform us that the objects were of great beauty or enriched with jewels, or were made to the glory of the Franks, we shall pass them over, more especially as none of them are now extant.

The same uncertainty attaches to the oft-repeated name of Mabuinus, who is described in the will of Perpetuus, bishop of Tours (A.D. 474), as having made a gold cross, in that prelate's possession. Unfortunately the birthplace, country, and works of this artist (with the exception of the cross), are entirely unknown; and after him the dreary blank still remains unenlivened, until we meet with the name of Abbon, the master of Eloi.

Eloi (Eligius or Electus), according to the generally received date, was born in 588. His life exhibits a series of changes of by no means uncommon occurrence in the middle ages; and we shall shortly see the goldsmith, as in the somewhat parallel case of St. Dunstan, transformed into the courtier and minister; the minister into the bishop; and lastly, the bishop into the saint.

The name of Abbon, the moneyer and goldsmith of Limoges, has been rescued from oblivion, solely from the fact, that it was to him that the young Eloi was apprenticed. That the pupil in course of time outstripped his master is a fact verified by St. Ouen, to whom we owe most, if not all, our information upon this subject. The youthful Eloi was early introduced to the court of Clothaire II., through the friendship of the treasurer Bobbon; and it was on this occasion that the two thrones of gold were executed, which had until then defied the skill of the royal goldsmiths. The honesty of the Limousin in making the second throne out of the overplus of the first, so contrary to the usual practice of the workmen of the time, had the effect of procuring him the chief employment of Clothaire. Dagobert continued his father's esteem to Eloi, who, together with his pupil Thillo (afterwards St. Theau), executed a great many works for the king; among others, that of engraving and stamping the coinage.

We now come to the two most important labours of love in the life of the future saint; important even to us at the present time, for by them a knowledge of the arts was kept up and continued until better and more propitious days. These worthy acts were the foundation of the monastery at Solignac, near Limoges, which was instituted for artist-monks, and of which Thillo was the second abbot; and that of the convent of St. Martial, in the Isle de Paris, presided over by St. Aure (*aurata*), destined for the production of embroidered vestments for the use of the Church. Solignac was founded in 631. The original charter, with the signature of the pious founder, has come down to our own time; and for many a year, when all that was mortal of Eloi had returned to its kindred dust, the effects of his foresight and liberality were to be seen in the prosperity of his abbey and native town. But in the midst of all his prosperity, in the heart of Eloi the councillor, the bishop, the founder of abbeys, the spirit of Eloi the moneyer and goldsmith ever resided. His bellows were never still; his hammer was never idle. It was to him that the châsses of St. Genéviève, St. Germain, St. Martin at Tours, and St. Denis at Paris, owed their origin, their form, and very detail. On the church of the latter saint he appears to have lavished his work with the most unsparing hand; and the pulpit, the gates of the sanctuary, and the cross and frontal of the altar, equally attested the skill of the bishop and the generosity of the king.

On the death of Dagobert, Eloi retired from public life and divided the rest of his days between his episcopal duties and his labours in the arts. At length he died in 659, at Soissons, and was buried in the monastery of St. Loup, without the walls of that city. A few years afterwards and the piety of Bathilda, queen of Clovis II., covered his remains with a tomb of gold and silver,—a truly appropriate monument to so good a man and so able a goldsmith. We cannot conclude our short sketch of the life of St. Eloi without recommending to the reader's notice the agreeable memoir contained in the interesting "Dark Ages" of Mr. Maitland.

Having said so much respecting Eloi, it will naturally be expected that we should make some mention of such remnants of his work as might be supposed to have come down to us. Unfortunately they have nearly

all perished; the crucibles of the Huguenots and Republicans respected neither art nor antiquity; and the *chefs-d'œuvre* of St. Eloi were, no doubt, annihilated in company with the "mesquineries" of Louis XV.; however, even in the time of Suger, the bronze throne now in the Cabinet des Médailles was considered as the work of St. Eloi; and although most antiquaries are of opinion that it is but a Roman curule chair with additions of the tenth century, it is not improbable but that it might be a copy by that great artist of a more ancient example. We are fain to confess, that there exists no notice of it in his life, but possibly, being in bronze, it was not thought worthy of particular mention. The chiselling and finishing up of the lower part are especially well and freely executed.

In addition to this work, which may be looked upon as problematical, we fortunately possess other productions of St. Eloi, concerning the authenticity of which there can be no doubt. The five types of the gold rol, four of them belonging to Dagobert and one to Clovis II., with the name "Eligius" stamped upon them, may be alone regarded* as absolutely authentic remains of all the works executed by the far-famed St. Eloi, patron of all goldsmiths of France.

The artist-monasteries were still in full operation, when, about a century after the death of the Saint, Charlemagne ascended the throne of France. From them he was doubtless enabled to procure artists capable of executing works worthy of his reign; and the sword and crown of Charlemagne, are not less likely to have been of French than of Italian or Byzantine manufacture. It is to be regretted that of all the treasures buried with that great Emperor, and appropriated in 1166 by the cupidity of Frederick Barbarossa, these two are the only authentic ones at present existing.

The crown consists of eight pieces, four large and four smaller, connected by means of hinges. The former are entirely filled with jewels and filagree work, while the latter contain respectively the figures of the kings David and Solomon, and of our Lord: these are executed in cloisonné enamel, the ground for which has been beaten up into the shape of the figure. The sword has the guard and scabbard covered with plates of gold, and set with cloisonné enamels. The most remarkable of these is the upper lozenge of the scabbard which encloses an imperial eagle.

All those wonderful tables of gold and silver, of which the Emperor's will makes mention, have entirely disappeared; and we are inclined to regret them the more, as we know, that one represented the cosmography of the universe, while the second and third were embellished respectively with views of the cities of Rome and Constantinople.

The reigns of the successors of Charlemagne have been nearly as unproductive to the present generation, as that of their father; and the binding of the Bible of Charles the Bald is the sole piece of art in the precious metals, bequeathed to us by the Carlovingian dynasty. The design may be briefly described as an ivory tablet surrounded by a border of precious stones and filagree.

A careful examination of the leading characteristics, not only of the above-mentioned works, but of those which were produced for nearly three subsequent centuries, induces a recognition of the universal practice of regarding the whole value of every object to consist, not in the work or in the design, but solely in the quantity of jewels with which it was possible to load it. To that barbaric fashion all grace, all elegance, all form, were sacrificed. Large uncut gems, set *en cabochon*, were introduced in every situation; and the lamentations of the employer, as in the case of Suger, were not for the want of art-workmen, but for the deficiency of precious stones.

During the ninth century, the Bishops of Auxerre vied with each other in presenting costly gifts to their cathedral; but though we are informed what those gifts were (altar-tables, frontals, candelabra, &c.,) yet no description of their artistic value has reached us, and the articles themselves have perished. The same observation applies to the new shrine, which Hincmar, bishop of Rheims, caused to be made for the church of St. Remi; but this, however, we are assured contained figures of twelve bishops, his predecessors. Du Sommerard, in his "Album," Tenth Series, p. xxxviii., has published a crosier† of silver filagree, which is said to have been that of St. Robert, the first abbot of Citeaux, to whom it was given by Walter, bishop of Chalons, in 1098. The learned editor of the "Arts of the Middle Ages" asserts this crosier to be of the ninth century; but it is doubtful if similar crosiers were in use at that time.

* Many other works of his are mentioned, *e.g.* his enamelled chalice, his episcopal crosier, his small seal of crystal, and the ring with which he wedded St. Godeberte to the Church.

† In 1799 it was in the Museum at Dijon.

The tenth century was in all respects a dark and gloomy age; the numerous political calamities of the times, together with the consciousness that the mystic number of a thousand years would soon be completed, since the world had witnessed the birth of the Son of God, induced a most general belief that the prophecies of the Apocalypse were on the point of accomplishment; and that the end of the world was at hand. Timid and religious men thought only of making their peace with God and his Church; and many a rich offering was made, and many a shrine and altar gorgeously adorned, with those metals, the possession of which, according to popular belief, could benefit their owners but little in the present life. What was probably one of the most important of this class of offering was preserved until within comparatively few years of our own age; for it was only in 1760 that his exigencies caused Louis XV. to melt the altar-table (*dossel*) with which the piety of Bishop Seguin had decorated the cathedral of Sens, in the year 990. Before it was finally consigned to the foundry, an artist was employed to make a drawing of it, and it is from this drawing, and a contemporary description that we are now enabled to form a very accurate idea of the work of Bernelin and Bermim, the Canons of Sens, for to them belongs the honour of the execution of this *chef-d'œuvre*. The design* was divided into three compartments; in the middle of the centre one was the Saviour in glory, and the corners (which were rounded so as to make the whole assume the shape of a quatrefoil) each contained an angel. The centres of the two side compartments had respectively the figures of the Blessed Virgin and St. John the Baptist, within a circle; the interior angles contained the four symbols of the Evangelists, while the life of St. Stephen occupied the exterior. The same construction was made use of in this altarpiece as we find employed six centuries later, in the table of gold directed to be executed for his tomb by Henry VII. of England. The framework and divisions were made of strong pieces of timber; these were plated with gold, and in the subject under observation were further decorated with stones and filagree. The panels were filled with figures beaten up on thin plates of gold, and afterwards filled with mastic to give them the requisite solidity. We are also informed that Seguin gave another table of silver-gilt in 978. This, however, was sold to erect the "Tour de Plomb."

At length the terrible age passed away, and the world was regarded as having taken a new lease of existence. Churches were demolished and rebuilt, and with them the ecclesiastical ornaments were refabricated. A new feeling had come over men's minds, and from this time we lose the traditions and inspirations of the antique, and art gradually assumes those severe forms which attained so rare an excellence in the thirteenth and fourteenth centuries. Robert, king of France, having had the misfortune to fall under the ban of the Church on account of his marriage, endeavoured to propitiate the clergy with rich presents offered to their churches; and it was to Odoram, a monk of Dreux, that the execution of the most important of these was confided. No doubt Odoram was one of those artist-canons so common in the cathedrals of that time. St. Eloi, as we have already stated, founded two establishments for the education of this class of art-workman; two canons, as we see, executed the retable at Sens; and in the first quarter of the eleventh century, Geoffery de Champallement, bishop of Auxerre, instituted three prebends in his cathedral for artist-canons. One of these was to be a goldsmith, and the others a painter and "vitreareus" (stained-glass worker). This kind of institution was by no means uncommon, and many of the monastic orders, more especially the Cluniacs and the Benedictines, even made it their boast to encourage the liberal arts, while the stricter rule and more severe precepts of St. Bernard taught his sons of Citeaux to despise presents which savoured so strongly of the world.

The testimony of Johannes de Garlandia,† however, effectually prevents our yielding to a belief that all art was confined to the cathedral or monastery. In his "Dictionnarius" he tells us that there are several varieties of lay goldsmiths, and thus classifies their various avocations:—1. The moneyers, whose duty it was to make money from the gold and silver delivered to them. Most nobles at this time had a coinage of their own, and it is by no means improbable that these moneyers struck coins for any one who supplied them with the bullion. That they were by no means the most honest of men is proved by the wholesale punishment inflicted on their English brethren by Henry the First. 2. The clasp-makers, who made clasps in tin, lead, iron, and copper; also collars and grélots, or hawk-bells. 3. The hanap-makers, who were called cipharii, and who not only made vessels in the precious metals, but most probably mounted wood cups in gold or silver. 4. The

* It was 9 ft. 3 in. long by 6 ft. 3 in. broad, old French measure.

† John de Garlande was a celebrated teacher in the University of Paris. He followed the fortunes of William the Conqueror into England, but afterwards returned to Paris. Several works of his, besides the dictionary, are extant—among others, a collection of Latin Homonyms. His "Dictionarius" furnishes a curious picture of ancient industrial art in France.

jewellers and goldsmiths, properly so called. 5. The lorimers, who made spurs of gold and silver, and decorated the reins and bits of horses.*

No mention is made by the worthy master of arts of the enamellers. Had the art, brought to Paris by St. Eloi, been forgotten in that town, or had the cloisonné enamels come into fashion? and were they imported from the East? However that may be, in the Louvre there is a golden box for receiving a copy of the Gospels of this period, which, while betraying all the signs of French art, is decorated with cloisonné work. The question we have elsewhere discussed presents itself in France, as in Italy and in England, Where did these enamels come from? Is every specimen found to be attributed to Byzantium? or may it be supposed that some Greek artists may have taught the secret to the natives of any of those countries?

We now come to one of the greatest men of the twelfth century, and one who exercised an influence on the arts seldom permitted to a single man. Brought up from an early age in the Abbey of St. Denis, and in company with Louis VI., Suger became, first of all, minister of state, and in 1122 was elected abbot of that monastery where he had received his education. From that time his life is one long account of the works executed, through his liberality, and under his superintendence, at St. Denis. For some time he kept up the customary state of the office of abbot; but when reproved by St. Bernard, we find that, like St. Eloi, he dismissed all luxury from his own person, reserving it entirely for the church.

It was during a voyage to Italy that he received the news that he was elected abbot; no doubt this intelligence had great effect upon his observations in that country: for we find him visiting the court of Roger II., king of Calabria, the great protector of the arts, and on his return opening a quarry near Pontoise, in order that his church might have marble columns similar to those of the Baths of Dioclesian and other monuments of the Eternal City.

In 1137 the rebuilding of St. Denis was begun, and was so diligently prosecuted that the dedication took place in 1140. All that now remains of Suger's Abbey is a small portion of the west end. There is much reason for regretting the glass and paintings with which the care of the worthy abbot had adorned his church; but how much more must we lament the loss of those bronze doors, the first of the kind cast in France, and which existed even in Felibien's time (1706). The execution of these is prior to all those in Italy, if we except the gates of St. Paul without the walls (which were of Byzantine workmanship, not Italian). It is therefore probable, that if Suger obtained foreign assistance, which he most probably did, for these gates, it was from Germany, where the doors at Augsburg, and many other works of a similar nature, had been already executed. Felibien has thus described those gates, which, we may remark, were gilt:—"That in the middle contains, in various cartouches in demi-relief, the history of the Passion, the Resurrection, and the Ascension of our Lord; the figure of Suger is represented in the same manner as in the stained glass of the window above,† except that in the latter he is prostrate at the feet of the Virgin, while in the former it is the Saviour whom he adores."

We shall now, in a brief manner, notice some of the principal works with which Suger enriched his abbey; the narrative will be the more interesting, as we have his own account in the work "De Rebus in Administratione sua Gestis." And although many things have disappeared since Felibien published the prints of the "Trésorerie," still the Louvre and the Bibliothèque National possess many undoubted works of Suger.

1. "Tabula aurea superior ante sanctissimum corpus." This was probably, like the "retable at Sens," a kind of altar-piece; the jewels for it were obtained by the liberality of the nobles, who contributed the rings from off their fingers. 2. The altar also received other gold ornaments, such as candelabra, &c., so that "totum coreum quâque altare apparuit aureum." 3. But his great ambition was to construct a crucifix of gold, which should surpass the cross of St. Eloi; to accomplish this he obtained six or seven Lorraine workmen, who were employed about two years. A vast deal of enamel was used upon the base, stem, and capital, but neither these nor the gold could make it more valuable than that of St. Eloi without the aid of precious stones. Now he had entirely exhausted the jewellery of the nobles for his golden table, and the crucifix must have been at a stand-still unless Providence had befriended him; for it is related that at this juncture three monks from certain convents came and offered him a sufficient quantity to complete his work for 400 livres. These jewels had formerly adorned the drinking-cups of Henry the First of England, and in the

* Theophilus (who by some is supposed to have lived about this time), it will be remembered, gives a chapter on the manufacture of the small rosettes for decorating harness.

† This interesting relic is figured by Du Sommerard, in his Atlas, vii.

division of his property had fallen to the share of Theobald (Thibaut), count of Champagne, who, it appears, had presented them to these convents. Suger purchased the gems, and thus the crucifix was happily finished.

Nor was he content with the manufacture of new things; the spirit of innovation had by this time taken complete possession of his mind, and he forthwith proceeds to remodel even those things most venerable for their antiquity and associations. Nor did the works of St. Eloi, which he praises and in the same breath calls barbarous, escape. He tells us that they were repaired and beautified by him in the following manner: An ivory pulpit was entirely remodelled, with the addition of copper animals. The candelabrum given to St. Denis by "Karolus Imperator" (Charlemagne) was regilt and overlaid with enamels—probably of Limoges manufacture. The eagle in the choir was regilt; and the throne of Dagobert, "tam pro tanti excellentiâ officii etiam pro operis ipsius pretio antiquatam et disruptam refici fecimus.* In the execution of such works of piety and art the life of the worthy saint was spent; and few who are ever moved by either influence can refrain from admiring his lively faith, or his excellent taste.

We must now once more return to Limoges, of which city we have heard little or nothing since our reference to the foundation of the artist-monastery of Solignac. In the year 1077, we find mention made that the monk Guinamundus, of the Abbey of La Chaise Dieu, made the shrine of St. Front, and covered it with plates of enamelled copper; and from this time until the end of the fourteenth century a continuous series of works were produced in this town and in the circumjacent country. It is curious that all the works of the Limousins bear a marked impress of Byzantine art. Various causes conduced to this effect.† It is probable, in the first place, that the Limoges artists were for a long time in the habit of copying Roman and Byzantine jewellery, since we meet with records of donations of rich shrines, crosses, and other articles of church plate, arriving at a very early period in that part of France as presents from the Greek emperors; secondly, we know that they were in constant intercourse with the Venetians—the people of all Italy who were most deeply imbued with Byzantine feeling; and, thirdly, at the end of the tenth century, these same Venetians established a factory at Limoges, about the same time that the Doge Orseolo retired there to end his days.

It is through such an intercourse alone that we can account for the presence, in the representations of holy personages in the Limoges enamels, of many peculiarities belonging rightly to the Eastern Church exclusively. The style, once started into life, grew most rapidly in popular estimation, and the "opus Lemoviticum" was one of the most highly-cherished objects in the church inventories throughout Europe, from about 1100 to 1400. Every species of object manufactured in copper was ornamented with it: chalices,

* In the trésor of St. Denis, among numerous articles of questionable authenticity, were accumulated many which may be clearly identified with Suger, such as:—"*Item*,—a vas preciosissimum de lapide prasio ad formam navis exculptam." Felibien translates "prasio" by "jade;" it was, probably, some stone closely resembling chrysoprase. This was set in gold and enamels.

"*Item*,—Vas quoque aliud, quod instar justæ berilli aut cristalli videtur." It is now in the Louvre, and bears an inscription to the effect that Louis VII. had given to Suger the present which his queen Elenor had given him. The legend runs thus:—"Hoc vas sponsa dedit anor regi Ludovici Mitadolus avo milu rex sanctisque Suguris."

"*Item*,—Calicem preciosum de uno et continuo sardonice, quod est de sardio et onice (sardonix)." Du Sommerard says that this is not mentioned by Felibien, but he (Felibien) mentions a salt-cellar made of an agate or onyx, enriched with gold and precious stones, which looks very like Suger's work.

"*Item*,—Vas quoque huic ipsi materia non forma persimile amphoræ." Felibien has drawn this as an agate vase, and gives the same inscription as that we find in Suger's account, namely, "Dum libare deo gemmis debennes et auro. Hoc ego Suggerius offero vas domino."

"*Item*,—Lagenam quosque preclaram, quam nobis Comes Blesensis Theobaldusen eodem vase destinavit, in quo ei Rex Siciliæ illud prius miserat." This appears to refer to the agate part of the preceding article. Du Sommerard observes that it is a proof of the skill of the Sicilian artists in cutting hard substances.

"*Item*,—Vascula enim chrystallina qua in capella nostra cotidiano servicio altaris assignaveramus." These are two vases shown by Felibien, one in crystal cut into facets, and the other of beryl.

Felibien also gives the amphora in porphyry, surmounted by an eagle's head in silver gilt, "manu admirabile factum," with this inscription: "Includi gemmis lapis iste meretur et auro marmor erat: sed in his marmore carior est."

He also shows a chalice with handles, in Oriental agate, and a paten in serpentine, with gold dolphins in the centre, with a rich border of stones. This chalice, we believe, went by the name of the Chalice of Suger, and in the "Histoire du Cabinet des Médailles" we are told that it was "stolen from thence in 1804, and sold to Mr. Townley, who on his death left it to the British Museum, where it *now is* (1838)," but where we have been unable to find it.

With all these, and much more, did the venerable abbot adorn his church. He has even left us his reasons for so doing, and as they present a fine picture of his pious enthusiasm, we shall indulge ourselves by their reproduction:—"Si libatoria aurea, si fialæ aureæ, et si mortarolia aurea ad collectam sanguinis hircorum et vetulorum aut vaccæ ruffæ, *ore Dei*, aut prophetæ Jesu deserorebant, quanto magis ad susceptionem sanguinis *Jesu Christi* vasa aurea, lapides pretiosi, quæque inter omnes creaturas carissima continuo formulatu, plena devotione exponi debent."

The above notes respecting this most interesting collection have been gathered from a comparison of Felibien, De Sommerard, and Suger's own writings.

† See the Abbé Texiér in the "Annales Archæologiques of Didron," and the "Annales des Antiquaires de l'Ouest," "Essai sur les Argentiers et Emailleurs de Limoges." Also, Didier Petit and Dussieux upon the same subject.

patens, crosses, candlesticks, shrines (both portable and fixed), bookcovers, goblets, altar fronts, monumental tablets, effigies, &c., all luxuriated in this graceful and enlivening adornment. About the middle of the fourteenth century, the troubles that fell upon unfortunate France destroyed the art, and we must wait until the reign of Francis I. to find it again reviving in that country.

We may gather some faint idea of the riches possessed at this prolific fountain-head by the ecclesiastics of the diocese of Limoges, throughout the whole of the middle ages, from particulars furnished by the Abbé Texiér, who tells us, "that from the twelfth century the great abbeys of the district were regularly pillaged by the English, who, according to Geoffroi, included in their depredations even the sanctuaries, for the most part enamelled; such as the enormous altar of Grandmont, the coffer of Bourganeuf, which served as a receptacle for numerous precious articles, and many others." These depredations, thanks to the Huguenots, were not even discontinued in the sixteenth century; and yet the Abbé assures us, that in the year 1789 there still existed, in the diocese of Limoges alone, the enormous number of 2500 engraved and enamelled reliquaries, to say nothing of chalices, bénitiers, dishes, shells, drinking-vessells, thuribles, incense ships, crosses, paxes, monstrances, pixes, covers of books, dyptichs, processional crosses, and objects of a similar nature. At the *séance* held in 1841, of the Société pour la Conservation des Monuments, at Cherbourg, the Abbé Texiér mentioned his intention of forwarding to the Society an account of not fewer than fifty-seven Byzantine reliquaries, which he saw at the septennial exposition of reliques at Limoges, and of which some donations from the kings of Jerusalem strongly illustrated the introduction of Byzantine architectural ornamentation into France.

In tracing the history of the different metals in France, we shall from henceforth mention enamel only when it may occur as decorating some particular specimen or ornament of metal, not as a separate art; and in the meantime we will briefly state the characteristic differences between the productions of the eleventh, twelfth, thirteenth, and fourteenth centuries in the champlevés enamels. Those of the eleventh and twelfth centuries are distinguished by the attempt to render the carnations by a flesh-coloured enamel, while the figure itself is often enamelled after the Greek fashion, on a gilded ground like a mosaic. In the productions of the thirteenth and fourteenth centuries the ground was alone coloured, the figures being left in metal; thus entirely departing from the original Greek type. The details were expressed by engraving, and filled up generally with a blue enamel. The earliest existing monumental enamel is a tablet, now in the museum at Mans,* but formerly attached to a pillar of the church of St. Julien, representing Geoffery Plantagenet, "le Bel," the father of our Henry II., armed with a shield and sword. The whole of the details of the dress, &c., are in enamel, a thin strip of metal being left for the folds. A diaper pattern, also in enamel, decorates the ground of the plate, and more than one colour is used in juxtaposition. Geoffery, we may observe, died in 1150, and in 1180 the artists of Limoges were called on to execute the monument of Henri le Large, count of Champagne, in the church of St. Stephen at Troyes. This was of an entirely different construction from that we have just mentioned, and the best idea will be obtained by describing it as a hollow altar-tomb, the sides and ends being perforated with semicircular arches, and each of those again subdivided. Within lay the effigy of the deceased, and on the top of the tomb was a splendid cross, decorated with images of silver, of which metal many of the ornaments were also made. In 1201 another tomb of the like material, but much richer, was erected in the same church to the memory of his successor, Thibaut III. In this case the figure was extended on the top of the tomb in the usual manner, and twelve small figures of his relations decorated the sides and ends of the monument. It was entirely constructed of wood, overlaid with plates of silver, except where the presence of enamel required the use of copper. The coronet of the figure was set with stones; white and blue enamels imitated its eyes; while the junctures of the various plates of metal were concealed and decorated with borders of filagree and precious stones.†

It is singular how very unwilling the Limoges enamellers were to work upon silver,‡ for it is seldom that we read of any works of this kind being executed, and we only know of one of any magnitude at present existing. The châsse of St. Calmine is remarkable, not only for this peculiarity, but as showing how little the Limoges school of the thirteenth century had departed from the Byzantine traditions of the ninth.

* See Stothard's "Monumental Effigies;" Albert Way's article on enamel in the journal of the Archæological Institute; Harry Rogers on enamels, Du Sommerard, Labarte, &c.

† Both of these tombs were destroyed in the Revolution of 1798.

‡ In 1209 the Argentier Chatard gave an enamelled silver ciborium to the abbey of St. Martial.

In the twelfth century architecture had made its great step,—the pointed arch had been introduced,—and accordingly we see an entirely new expression given to all the arts, and among them to that of working in every metal. From this time we meet with fewer gems, less filagree, and less barbaric magnificence. These are replaced by elegant adaptations of the architecture of the period, and by charming and beautiful little figures. The goldsmith becomes a designer, and that without ceasing to be the skilful workman. The blacksmith follows his example; and in the gates of Nôtre Dame de Paris, executed at the beginning of the next century, we meet with the very perfection of the art.

As to the actual works of the twelfth century, they are by no means so uncommon as those of the preceding epochs. Du Sommerard gives drawings of two very beautiful crosses, decorated with gems *en cabochon*, and filagree; one is now in the Hôtel de Cluny, and the other, originally from the priory of Epoisses, remains in the possession of the church of Rouvres, to which it was given on the suppression of the former institution in 1770. Epoisses was founded in 1189, by Hugh III. duke of Burgundy, and this cross is said to have been possessed by the priory from the time of its establishment. The so-called shrine of Charlemagne in the Louvre; the Limoges triptich, in Chartres cathedral; and the golden cross with the representation of Jerusalem, in the treasury of St. Denis, are all to be attributed to the twelfth century.

The beginning of the thirteenth recalls to our memory the wonderful doors of Nôtre Dame,* of which Sauval, in his "Antiquités de Paris," gives a singular account,† only reconcileable with the obviously real date, by supposing that Biscornette, a celebrated smith of the sixteenth century, may have executed some repairs in the middle of that century.

Beauvais, Chartres, Oreival, Gonesse, Nantes, Chalons-sur-Marne, and many other towns, possess hinges similar to those of Nôtre Dame; and though the change of fashion, or the violence of the Revolution, has destroyed nearly all the best iron-work in France, our admiration is still excited by the beautiful grille of St. Saturnin, at Toulouse, with its admirable frieze of arabesques, and its unrivalled cresting of roses, thorns, and oak-leaves.

That the art of casting in bronze, introduced by Suger, had by no means retrograded, we may infer from the tombs of Everard and Geoffery d'Eu, bishops of Amiens; these are still to be seen in that cathedral, and it would be indeed difficult to imagine any monuments more beautiful and better wrought.

The general design, which is nearly similar in both cases, consists of a table with an inscription on its edges; this is supported by "six lionceaux," and upon it is placed the effigy in very high relief. At the head of the figure is a very elegant niche, and small angels with censers complete the composition. The two prelates died respectively in 1212 and 1223; and several tombs in the crypt of St. Denis show that their example was extensively followed. Unfortunately little is known of the artists in bronze, and whether they were devoted solely to this art, or whether they joined to it the profession of the goldsmith and statuary, is a point not at present known. Of one fact we may be certain, they were not pupils of the great school of Limoges; for, independently of the absence of anything like a Byzantine character in their works, they were executed on an entirely different principle. These bronze statues are regularly cast, and very probably, like the contemporary works in England, were in the first instance modelled in wax. The Limoges practice, on the other hand, was to carve the figure in wood, and afterwards to overlay it with thin plates of copper, the junctions of which were concealed with bands of filagree and enamel.

The tomb of William de Valence, in Westminster Abbey, shows this manipulation; and at St. Denis is preserved the monument of Jean the Second, son of St. Louis: this, we believe, is the last in the series of the tombs constructed "opere Limoviensi." We ought not, however, to omit the splendid one figured in

* Figured in Willemin's "Monuments."

† "The iron of the door has been admirably bent (*roulé*) by Biscornette. The sculpture, the birds, and the ornaments are marvellous. They are made of wrought iron, the invention of Biscornette, and which died with him. He melted (*fondoit*) the iron with an almost incredible industry, rendering it flexible and tractable, and gave it all the forms and scrolls (*enroulements*) he wished, with a 'douceur et une gentillesse,' which surprised and astonished all the smiths. Gaegart, 'serrurier du roi,' in order to discover the secret, broke off some pieces from these hinges, but confessed that he got nothing for his pains and experiments, and had great difficulty to use even that little. These gates have been made 120 years, and are yet admired by all serruriers. The wonder is that none of the trade have ever been able to tell precisely the mode of manufacture. Some say it is cast (*fondu*) and filed up; others, that it is wrought with the hammer; others, that it is 'fer moulé, qu'ils appellent fer de barreau.' The most skilful of them think it is cast (*fondu*) iron without any soldering (*sans soudure*). However, the secret died with Biscornette, for nobody ever saw him work." We are likewise told that Biscornette entered into a compact with the enemy of man to obtain his assistance in working these hinges; but that when it was requisite to execute the centre door the diabolical power was helpless, as through it the sacrament was wont to pass. It is, however, far more probable that the iron-work of the centre doorway was destroyed at an early period, in order to be replaced with one of those wonderful works in wood which were so fashionable in the fourteenth and fifteenth centuries, and so many of which still adorn the cathedrals of France.

Lobineau's "Histoire de la Bretagne,"* for it is by far the most perfect representation of what these tombs must have been in their pristine state. We here see the decorations of the upper tomb, which in almost every case has been defaced or destroyed.†

During the long reign of St. Louis, 1226 to 1270, all the arts appear to have advanced rapidly; and although we know that he brought many articles from the East on his return from the Crusades, they appear to have exercised but little influence on the existing national style. It was in this reign that Etienne Boileau, provost of Paris, composed his celebrated "Livre des Métiers," and from the eleventh chapter, which relates to goldsmiths, we obtain some curious insights into the mysteries of that craft.‡

During the whole of this century Toulouse and Montpellier received a great number of Limousin artists, and in these two towns the manufacture of "grosserie," or large vessels for secular uses, was carried on to a great extent, both in gilt and plain silver; while Limoges herself would appear to have been almost exclusively occupied in working for the use of the Church. Their general excellence, however, caused her workmen to be sought for far and near; not only in Montpellier and Toulouse, but in Paris, and even in England, where Johannes Limovicensis executed the tomb of Walter Merton, bishop of Rochester, in 1267.

But England would appear to have had little need of such assistance later in the century, for we find in the list of goldsmiths of Paris, taken for the purposes of taxation in the year 1292, the names of Richardin the enameller of London, and Robert l'Anglois.

As to the existing remains of the thirteenth century, we are enabled to point out the gold chalice of St. Rémi, formerly belonging to the Cathedral of Rheims, now in the Cabinet des Médailles at Paris; the châsse of St. Taurin at Evreux; that of St. Romanus at Rouen; the clasp of St. Louis, still preserved in the Museum of the Louvre, which collection also contains the ciborium of Limoges work made by "Magister G. Alpais;" and many other specimens are yet to be found in the trésors of the various cathedrals and in private collections.

The early part of the fourteenth century was, upon the whole, an unfortunate time for France. The English wars, and the exhaustion of the finances consequent upon them, caused the kings and nobles to melt down a vast quantity of their plate. The trade of the goldsmith was therefore far from flourishing during the reigns of Philip de Valois and Jean le Bon: in fact, these kings seem to have vied with each other in enacting the most stringent ordinances, until at last the poor workman was forbidden to melt down any metal at all unless with the permission of the king or his mint-masters. But no sooner had the wisdom of Charles V. expelled the English and restored peace to the country, than we find the king and his brothers in the possession of an almost fabulous amount of jewellery and plate.

Of the two inventories now in the Bibliothèque National, although that of the king mentions articles of more intrinsic value, that of the Duke of Anjou is by far the more interesting, by reason of the descriptions, which are much longer and more complete. The most remarkable fact is the enormous quantity of gold (348 marks) which Henry, the duke's goldsmith, was in possession of for making *la grande nef*. This *nef* was a coffer in the form of a ship for keeping the knife, fork, spoon, goblet, and other things for the use of the possessor, and had generally a name; thus we read of one belonging to the Duke of Orleans, called the Porquepy (Porcupine); and another is named the Tygre, and valued at 4000*l*. This last was the property of Henry VI. of England.

The principal objects on which the artists' skill and talent were displayed are the ewers, the hanaps, the fountains, the saltcellars, and above all the *nefs;* while the furniture of the private chapel would equally claim his attention: for in the list of articles dedicated to sacred uses are comprised crosses, chalices, burettes, clochettes, bookcovers and clasps, censers, and reliquaries in the form of statues. Many, if not the majority

* This tomb was to the memory of Alix, duchess of Brittany, who died 1220, and her daughter; there are two effigies.

† By the upper tomb is to be understood the wood box which stood upon the stone plinth, and which supported the top slab and the effigies. The form of these tombs was doubtless derived from that of the "herses," or catafalques, which remained standing in the churches after the death of rich men, for a length of time, proportioned to the amount of money bequeathed for mortuary masses.

‡ After prohibiting the use of any gold or silver baser than the legal standard, which, we are told, was "la touche de Paris" for gold, and the "estelings," (sterlings) of England for silver, the regulations proceed to forbid the taking of more than one apprentice at a time; the master was not allowed to work on feast days, except for the royal family or the Bishop of Paris; and, lastly, two or three Preux d'hommes were to be chosen by the others "pour garder le mestier." The goldsmith who used false metal was to be banished for four or six years from Paris, "selon ce qu'il a desservi." The ordinances of Boileau, in 1260, had the effect of separating the various trades which had hitherto been known under the general denomination of "Orfévres"—a confused mass; since, from the "Livre des Métiers," we learn that this corporation had hitherto included, not only the christaliers or lapidaries, the gold-beaters, the "brodeurs," and the makers of chapeaux d'orfrois, but such trades as the potiers (pot-makers), tin-workers, ironmongers, cutlers, brasiers, and many others of a similar nature. From the date of these reforms, however, we find the goldsmiths existing as a separate company in Paris, with peculiar privileges.

of the pieces of secular plate, were of the most bizarre composition; thus we find them in the shape of animals, real or fabulous, and decorated with precious stones and enamelling: in fact, nothing more than large jewels. We read of an ewer in the form of a cock, who carries a fox on his back; and another in the form of a man, where the water is poured out of his hood. It is singular that this style was more particularly confined to the ewers, and for many years afterwards those formed of baser metals continued to be manufactured in the same grotesque forms.

The inventory of the Duke of Orleans, though properly belonging to the next century, is mentioned in this place, since it was taken at a very early period of that century (1406), and because it describes the same art. We here find very nearly the same kind of objects described as in the preceding lists. The *nefs*,* of course, are the most conspicuous.

The person of the master was no less ornate than his house, and accordingly in all three of these inventories occurs the mention of endless girdles, collars, chaplets, rings, brooches, clasps, &c., all more or less made of gold and silver, and ornamented with the usual accompaniments of stones and enamels.†

The remains of the fourteenth century consist principally of articles required for the service of religion, for, beyond a few hanaps and ceintures, the domestic orfévrerie exists only in description.

The Bibliothèque at Paris possesses several splendid covers of devotional books, particularly deserving of attention; one in particular, which the piety of Charles V. caused to be executed for La Sainte Chapelle.

In the Louvre, among the débris of the trésor of St. Denis, is the gold statuette of the Virgin, given to that abbey in 1339 by Jeanne d'Evreux. Its companion, a St. John, has disappeared since the time of Felibien. In the same museum are two angels supporting reliquaries, the carnations of which are rendered by an opaque enamel. In the trésor of the Cathedral of Rheims is a similar though smaller statue, of much better execution. We must not forget the mounting of the famous cameo of Jupiter, once belonging to the Sainte Chapelle, and now in the Cabinet des Médailles. No doubt many more works of this century exist in the cabinets of antiquaries and the trésors of the churches; but as these are difficult of access, it is hardly necessary to mention them more particularly. Labarte gives a list‡ of the goldsmiths who are mentioned in the documents of the fourteenth century as having executed various works.

During the whole of the reign of Charles VI., and the early part of that of his son, France was almost completely drained of all her treasures: doubtless part went to ransom the prisoners taken at Agincourt and in other disastrous battles, but the greater portion was melted or sold to defray the expenses of the war; and it was not until the entry of Charles VII. into Paris, in 1438, that any security could be afforded to the authorised workmen. Those, however, who had not been approved of by the "gardes" had taken advantage of the troubles of the times, and were in full activity. But although the trade soon revived, the manufacture of gold plate ceased with these wars, and before the end of the century we shall see that jewellery almost solely occupied the Parisian goldsmith.§

* One of them was worth so much that the duke had never been able to entirely pay for it, and after his death it was sold to pay the account. We also find a new piece of goldsmiths' work, the tablet or table, which at that time and long afterwards figures in almost every inventory; it consisted of a bas or alto-relief, executed either by "enleveure" (embossing), or casting, and very often contained relics: its uses were as varied as the subjects represented,—if small, it was worn as a jewel, or kept as a reliquary, or "roundel;" if large, it was placed at the back of the altar or buffet, and very often was fixed at the head of the bed to charm away evil spirits.

† When enamel is mentioned in these inventories we must not always assume the term as expressing that of Limoges alone, since by this time that variety had nearly, if not entirely, gone out of fashion; but we must remember that the secret of the transparent variety had by this time been imported from Italy. The little silver "plaques" were not only executed in the manner described by Cellini and Vasari, but were employed in the same manner as in the Limoges works, viz. to fill up the incised spaces. That these enamels were generally made separately and fixed to the vessel afterwards, we have a curious confirmation in an ordinance of 1355, in which the goldsmiths are forbidden to put chalk under them to increase the weight of the vessels. From another ordinance of 1378 we learn the difference between the "grosserie" and "menuiserie." The first comprehended all large vessels, as dishes, hanaps, goblets, girdles, &c., and was to have three grains remedy to the mark; the second, by which was understood all little images, leaves, lions, gargouilles, and "autres choses de semblable façon," were to have a remedy of five grains to the mark, no doubt to soften the metal and increase the facility with which they might be chased and worked up.

‡ They consisted of,—1. Jean de Mantreux, goldsmith to King Jean. 2. Claux de Friburg, who made a statuette of gold of St. John for the Duke of Normandy, and a superb cross for the same when king. 3. Jean de Piguigny, who made the diadem for the Duke of Normandy. 4. Robert Retour, goldsmith in the Conciergerie de St. Paul. 5. Hannequin, who was entrusted with the making of three new crowns for Charles V. 6. Henri, the Duke of Anjou's goldsmith. We find the Duke d'Orleans dealing principally with,—1. J. Durosne, goldsmith of Toulouse. 2. Jean de Bethencourt, a Flemish goldsmith. 3. Hans Crest, who had the title of goldsmith to the duke. 4. J. Tarenne, changer and citizen of Paris. 5. Nicholas Griffart, an excellent workman of the same town, was much employed by the duke.

§ Among the numerous artists described as residing at Paris during this century, Jean Hasquin, 1412; Perrin Manne, 1415; and Jean Leflamane (the Fleming), who worked for the Dukes of Burgundy, are the most remarkable; while Antoine de Bordeaux, Margeric d'Avignon, and Jean de Rouen, are celebrated as being very skilful in the "art fusoire—sculptoire et fabrile." The principal goldsmiths of this century, besides the above-named, were Jehan Delut, Pierre Landhors, Jean-Nicholas de Gonesse, Jean Mellier, Julien Gaultier, Simon Leroy, &c.

The sumptuary laws of Louis XI. experienced the same fate which always awaits legislative attempts to restrain strong popular inclination. His subjects declined to follow the example of their king, and consequently the fashion for jewellery remained the same. But, however avaricious Louis might have been, he was by no means deaf to the suggestions of devotion. He believed in the saints, and that those saints could be rendered placable by gifts; and the churches of Nôtre Dame de Clery, St. Martin of Tours,* and many others, could show rich gifts, bestowed by one who, except in such cases, was never known to give.

But the decadence of Christian art was at hand. Charles VIII. and Louis XIII., both engaged in Italian wars, brought back artists from Italy, which then was not the Italy of the thirteenth and fourteenth centuries. The severe art of Giotto had given way to the more luxurious cinque-cento: that style was imported into France by the workmen of Genoa, Milan, and Venice; and soon after its introduction the Gothic disappeared, and we meet with nothing but the Renaissance. But before we finally take leave of Christian art, it behoves us to consider another school, where the influences of comparative political freedom had transformed the French into the Flemish school.

The towns of Flanders had always been more or less celebrated for their manufacture of "grosserie." That branch of industry had been encouraged by the earls as far as the rebellious state of their subjects would permit; but it was not until the accession of the Dukes of Burgundy had restored peace to the various towns, that the art can be said to have assumed a distinctive character.

There are few relics of the Flemish Zelversmede more interesting than the collar of the "doyen," or dean of their company at Ghent. The date of this is placed, by the costume of the figures, in the middle of the fifteenth century. The material is silver finished with the burin, and the composition consists of sixteen pieces, representing in relief the labours of the miner, melter, refiner, and the final process of stamping the weight and value of the metal.

When, however, the house of Burgundy had succeeded to the two Flanders, and thereby restored unity to the towns which had hitherto been in a constant state of war and jealousy, the goldsmith was by no means the least prosperous among the many flourishing craftsmen. The manufacture of "grosserie" was more than ever encouraged, and to it was added the more profitable one of jewellery. The whole of the articles were not, as in France, consumed by the king and noblesse; on the contrary, a great proportion was made for the use of the citizens, and no inconsiderable amount was exported.

From the accounts preserved in the archives† at Lille we find the two last Dukes of Burgundy buying jewels to an almost incredible amount; their predecessors had lived in more troubled times, and their purchases were consequently of less value. The jewellers of that time were in the habit of making many things which at present are comprised in the trade of the silversmith; it was to them that the knight applied for the decorations of his arms and horse in war, and for the powderings and borders of his dress in times of peace. The ladies patronised them for the flocarts (tufts) of their "chapels d'orfroy" (or head-dresses), and the thousand other requisites for the female toilet; while the art of cutting the diamond, invented about this period, enabled the jewellery to appear more brilliant and luxurious than ever. A vast number of the names of the Flemish artists of the middle ages have been preserved to us, and are collected in our great authority, the "Histoire de l'Orfévrerie-Joaillerie,"—so many, indeed, that it is difficult to make an impartial selection.‡

The sacristies of the cathedrals, the cabinets of the antiquaries, and the public museums, have been the means of saving from the crucible more than one of the *chefs-d'œuvre* of these artists; and in the Hôtel de Ville, at Ghent, there is still to be seen the silver-gilt escutcheon made by Corneille de Bonté for the town trumpeters and fiddlers; whilst another of his works (a chrysmatory) exists in the cabinet of M. Onghena, in the same town. Louvain cathedral possesses a censer, two or three statuettes of silver, and two crowns of the same material, decorated with jewels, as well as a brass font, with an exquisite iron crane for lifting its cover.

* St. Martin of Tours received a silver balustrade in gratitude for the death of Charles the Bold.

† The duke appears to have had an officer called "l'orfévre de monseigneur," whose duty it was to choose the plate and to advance the payment. We have, therefore, few names in these lists belonging to the town of Ghent; as the duke, who resided there, was in the habit of making his purchases through this officer: whilst in the other towns the goldsmith generally appears to have transacted his own business. There was another officer, called the "garde des joyeaux," who, doubtless, was kept pretty well employed, as the said jewels were continually being pawned and redeemed.

‡ Among the principal may, however, be noted:—Guillaume Sanguin; Jean Pentin de Bruges; Louis Leblasère, the friend of Hans Hemmeling; Thierry de Stanere, who engraved the duke's private signet; Guerardin Clutin of Bruges, who mounted the jewels; whilst Jean Hennecart (peintre, varlet de chambre de monseigneur), and Jean of Cologne, also a painter, made designs for the goldsmiths' work.

The manufacture of works in iron and brass was carried to great perfection in almost all the large towns, some of which, such as Liege and Namur, are celebrated for it to this day. Louvain, Antwerp, Malines, Leau, and very many others, have more or less iron and brass work in their cathedrals and churches. The former is generally met with in the form of font-cranes,* door-handles, grilles,† well-covers,‡ &c.; whilst the latter takes the shape of grilles for the sacrament-house,§ fonts and their covers,‖ sconces,¶ candelabra,** lecterns,†† benature,‡‡ and monumental brasses §§ and effigies, of which latter the most beautiful example is the tomb of Mary of Burgundy (la Pucelle de Gand), who died in 1482.‖‖

No doubt the churches of France possessed equally beautiful objects; but the spirit of change and the violence of political events have left us literally nothing in the baser metals: the great works of the Benedictines give plates and descriptions of thousands of monuments now lost, which serve to excite without satisfying our curiosity. Occasionally, too, we find in the provincial histories of the present times copies of more than usually careful drawings of the last century; thus, in Arnaud's "Voyage Pittoresque en Troyes," there are prints of the tomb of the Count de Champagne (before described), and of a celebrated brass cross 36 French feet in height, which stood in the Place de l'Hôtel de Ville, and was erected by the confraternity of the Holy Cross in 1495; after being broken by the violence of the wind in 1584, it finally disappeared in the great Revolution. Sauval, in his "Antiquités de Paris," gives a distressing account of the removal of the great altar in Nôtre Dame, and the consequent destruction of all the beautiful brass pillars, &c., which formed its decorations and supported the châsse of St. Marcel; both these and "la belle croix" (for so it was called) at Troyes, were found to have a thick rod of iron inside. Some few of the cathedrals have had the good fortune to preserve one or more screens of iron-work of this century; but they are excessively rare, and possibly the greatest amount is in the Cathedral of Evreux, where all the chapels of the choir have ornamented "tiroirs" (handles) of exquisite tracery-work. The Hôtel de Cluny, at Paris, has also some splendid locks; and the Cathedrals of Rheims, Amiens, and Evreux, are surmounted by wooden fléches covered with lead, with crockets and finials most ingeniously worked.

When the tide of the Renaissance had once set in its progress was steady, though the transition was not violent; and the art of Louis XII. and François I. was a very different thing from the cinque-cento of Italy. Unfortunately, a vast quantity of the plate of this period¶¶ is supposed to have been melted to pay the ransom of the latter king, and no doubt much more was refashioned in after times.

A great change came over the Renaissance when the best artists of Italy were invited into France by the liberality of Francis I. The cinque-cento was introduced by such men as Leonardo da Vinci, Primaticcio, Rosso, and the great Benvenuto Cellini himself; and in a few years the style of France became the same as that of Europe.

The circumstances of the residence of Cellini in France have been so often commented on and described, that we shall give but a short abstract in this place, referring the reader who may be desirous of more information to his own memoirs. From these it would appear that he arrived in 1540, and on his presentation by the Cardinal of Ferrara, offered the king a basin and ewer, which were not quite finished. We afterwards find him in possession of the same salary as Leonardo da Vinci, and the residence of the Petit Nesle. During the four years he remained in France he executed a large silver statue of Jupiter, one of a set of twelve; the gold saltcellar now at Vienna; two or three vases; and the alterations for the gateway at Fontainebleau. A large statue, 54 feet high, for the same place, is represented as being partially modelled, but not carried out. Having managed to incur the ill-will of Madame d'Estampes, he gradually lost the king's favour, and in 1545 returned to Italy, leaving his two pupils, Ascanio and Paolo, at Paris; who, according to his own account, were but too glad of his departure. There can be no doubt that these two Italians continued to work there

* Louvain Cathedral, and Leau. † Malines. ‡ Antwerp. § Louvain. ‖ Leau, Louvain.
¶ Bruges; Jerusalem Church, Leau. ** Leau. †† Tirelemont, Leau. ‡‡ Leau. §§ Bruges.

‖‖ It consists of an altar-tomb of black marble, the whole of the sides and ends of which are decorated with a genealogical tree in copper or brass-gilt, interspersed with little figures of angels and enamelled escutcheons, each side containing thirty-one of these. At the angles are four niches and pedestals, containing figures of the Evangelists, very much in the style of Van Eyck. On the ledgment at the top are the arms and titles of all the states of Flanders, also gilt and enamelled; and the composition is finished by a gilt bronze statue the size of life, part of the details of which, particularly the border of the mantle, are perfectly wonderful. It was not until above fifty years after the death of Charles the Bold that a copy of his daughter's tomb was erected to his memory by the Emperor Charles V.; this, although professing to be a copy, is decidedly of inferior art, and the little figures and escutcheons will bear no comparison. For the general effect of these tombs, see Haghe's "Belgium."

¶¶ The Cardinal d'Amboise was a great patron of the Renaissance goldsmiths, and had one cup (la belle coupe) valued at 200,000 crowns.

after the traditions of their master, more especially, as he himself tells us, they were very skilful; and it is not improbable, but that much of the exquisite jewellery now in the Louvre may be by their hands.

As many of these works are enamelled, it is necessary to give some account of the progress of the Limoges school. From about 1350 to 1460 we hear little or nothing respecting the art, but at the latter end of the fifteenth century a very considerable number of the "Emaux à Paillons" are to be met with. These may be briefly described as large and gross imitations of the Italian enamels in relief, although they are produced by an entirely different process, and are distinguished by the number of imitations of jewels used in their decoration.

About the year 1530, Francis I., wishing to revive the art of enamel, established a royal manufactory at Limoges, and appointed Leonard Limousin first director of the new establishment. That artist's earliest enamels date from the year 1532. They were employed as decorations to cups, vases, medallions suspended against the walls, and inserted into panelling, frames for pictures, mirrors, &c.; and were mostly executed after designs of mythological subjects by the Italian masters. To him succeeded the family of Courtois, or Court; among which were many good artists. Numerous others followed, of greater or less excellence; and the names of Pierre Rexmon, Jean Courtois, and Nicholas Laudin, do honour to the catalogue of French artists. At length, in the hands of the generation of Nouailhers, who occupied the arduous post of sustaining the past celebrity of Limoges, the art sank into utter imbecility, and at the beginning of the eighteenth century all its ancient glory had departed.

In the year 1540 Francis made some very impolitic regulations respecting the quality of the gold, &c.; among other things he forbad the goldsmiths to use any but the "émail clair." These were found to be so oppressive to the trade, that the principal goldsmiths and jewellers* waited on him with a petition, begging him to rescind the said edict. The end of it was, that the worthy goldsmiths carried their point. A series of woodcuts by J. Ammon, executed about this time, are useful, as showing us the interior of the *ateliers* of the coiner, the goldsmith, the jeweller, the basin-maker, the spur-maker, and the coppersmith.

At this period, and long after, one of the richest jewels required by imperious fashion was the Enseigne, a species of medal generally adorning the hats of the nobles and the coîffure of the ladies. We have already alluded to these "enseignes" under the head of Italy, and the difference between the French and Italian was so slight as to be scarcely appreciable.

During the reign of Henry II., the German school had published a great many of those little prints for jewellers' work, which are known as the designs of the petits-maîtres; these had a vast influence upon French art, though it may be well questioned if that influence was by any means advantageous: on the contrary, it would appear to have rendered the forms ruder and heavier, without adding anything to their general effect. That there was no want of original talent of the same kind in France is proved by the prints of Virgil Solis, Etienne Delaulne (le maître de la licorne), Gilles L'Egare, and Wœiriot, while Jean Goiyon and Germain Pilon were in the habit of designing for the jewellers. Fortunately this German fashion, for such it must be called, was of no long continuance. The wars of the Reformation broke out, and men were then more employed in melting works of art than in producing them. Almost every town underwent the vicissitudes of war; almost every church saw its treasure melted by the Huguenots, as relics of superstition; or decimated by the Leaguers to supply the necessary funds for the defence of religion. Still at Paris and in the vicinity of the court large quantities of jewellery continued to be made, but these were for the most part in the Italian style. Indeed it would be difficult to point out any period in which jewellery was not made, for it was continually wanted for the presents which it was then the fashion to give and receive on all important occasions.†

The accession of Henry IV., by restoring peace, had the effect of reviving the manufacture of "grosserie," and is celebrated for the damascenings of Cursinet. The movement was continued through the reign of Henry's son and successor, Louis XIII., and the magnificence of Richelieu and Mazarin paved the way for the siècle of Louis le Grand.

* Among these we find the names of Toutin, Philippe le Roy, Cressé, Jacob, Garnier, Castillon, Hotman, Jean l'Enfant, Mathieu Marcel, Nicholas Lepeuple, Jean Herondelle, and Jean Cousin the elder. This latter was born in Lorraine, and being a goldsmith at Paris, at the age of twenty-six years was elected one of the "gardes" of the corporation.

† The ground-floor below the gallery of the Louvre was occupied by the most distinguished artists of the period, those "faiseurs d'étrennes," whose monopolies and extraordinary privileges excited the great envy of their less fortunate brethren of the corporation.

In one of the apartments of the Louvre is to be found a most magnificent collection of jewelled and enamelled cups, of all styles and ages, principally executed between the reigns of Francis I. and Louis XIII. To mention any one as being of peculiar excellence would be difficult indeed; for they are all of the best art and most careful workmanship. The design, for the most part, consists of a bowl of agate, crystal, or some other precious substance, with feet, bands, and handles of enamelled gold, set with jewels.

During this period of the Renaissance the style of design of the baser metals had experienced the same changes as that of the more precious ones: the same care was employed in their manipulation, the same art displayed in their ornamentation. François Briot, who flourished under Henry II., has been justly celebrated for his proofs in pewter. He, however, appears only to have done on a larger scale what was the common practice with all goldsmiths. When a piece of plate had been finished, it was usual to take a cast of it in pewter as a pattern for future use. Briot, however, took several copies; and thus enabled the sideboards of the *bourgeoisie* to display plate of equal excellence, though of less value, than those of the nobility.

Iron was likewise chased up to great perfection, as may be seen in the marvellous arabesque gates in steel in the Louvre. In Du Sommerard's "Moyen Age" there is a print of the lock of the Château d'Anêt, with a vast amount of architectural decoration and figures. The Hôtel de Cluny has also one or two others of the same kind. Several of the windows and balconies of the Louvre display great skill and design; and many of the houses in Paris retain their old ornaments of this epoch. A little later, in 1627, we have a complete treatise on iron-work by Mathurin Jousse; of which, as it is the first one of its kind, and contains the only information we have respecting the old work, we have subjoined a short abstract.*

To return to the goldsmith. His craft was far too necessary an adjunct to the magnificence of Louis XIV. to be at all neglected, and accordingly we find veritable works of art in the precious metals produced by the talents of Ballin. Claude Ballin, the son of a Parisian goldsmith, was born in 1615. After having studied the works of Poussin, at the age of nineteen he executed four great silver basons, representing the four ages of the world; these brought him under the notice of Cardinal Richelieu, and from that time we find him producing a vast number of *chefs-d'œuvre*, for the most part ornamented with figures in alto-relievo. His best work was, probably, the monstrance of silver gilt, five feet high, for the cathedral of Nôtre Dame de Paris. Unfortunately, the expenses of the war in 1688 caused a vast number of them to be melted down. Poor Ballin, however, died in 1678, and thereby escaped witnessing the destruction of his labours.

Before, however, they were consigned to the crucible, Delauney, one of his pupils, had taken careful

* In the year of grace 1627, one Mathurin Jousse took it into his head to publish a work on iron-work in general, and the art of the locksmith in particular, entitled, "La fidèle Ouverture de l'Art du Serrurier, où l'on voit les principaulx Préceptes, Desseings, et Figures touchants les Expériences et Opérations manuelles du dict art à la Flèche. Chez George Griveau, Imprimeur ordinaire du Roi, 1627. Avec Privilége du Roi." The book is dedicated to the Jesuits. There are several plates of keys and escutcheons, of by no means bad design: indeed far better than the contemporary art in England. The first plate in particular, representing four keys, is so good that it appears to have been copied from some of the designs of the petits-maîtres, and introduced to show what the old keys were like. The worthy locksmith begins at the beginning. Thus his first chapter (for the work is divided into sixty-nine) contains a dissertation on the antiquity of the art; in the next two he talks about apprentices and masters. Chapter 4 is occupied with the names and uses of the tools, of which he enumerates more than 130 varieties. Chapter 5, how to heat the iron properly. Chapter 6, to forge a nail. In Chapter 7 he urges his objections to the old locks. He states that they were always placed on the outside, and that even in his time many locks were still made after the old manner: but they were difficult to make on account of the intricacy of the action, but more especially so because of the ornaments of architecture, sculpture, or relief, "qu'il faut mettre sur icelles." We are also told, and we may readily believe it, that some took as much as two years or more to make; so that it is often the ruin of poor aspirants, "à cause des grandes frais et d'espences:" that these locks do not sell so well as those in use, that they can be easily picked, that they are difficult to clean, that they are subject to tear dresses, &c.; and lastly, that they are especially liable to get rusty on account of the water "qu'on jette dessus par inadvertance ou autrement, qui est la ruyne totalle d'icelles." He then gives a description of the several sorts of ancient locks, but as it relates principally to the mechanism, it is not worth translating at full length: suffice it to say, that he divides them into,—1stly. Those with simple hasps; and 2dly. Those with double or bifurcated hasps. Among other recipes given by Jousse is one to "melt iron and to run it into moulds like other fusible metals, and at little expense;" which (secret) *Biscornette*, when he died, "a emporté avec soi:" so that they (the inventors) have left us nothing but their manual work, which same is capable of perishing little by little with time, which devours and consumes everything; which would not be the case if every one employed his researches upon what is most beautiful and rare, and would cause it to be seen by the "esprits curieux qui le pouvroient conserver et faire viūre (vivre) à jamais." In Chapter 8 he advises the aspirant to begin to forge things in lead, so as not to waste coal and iron in his first attempts. Chapters 9 and 10 are devoted to locks. In Chapter 11 we are told how to make padlocks. He says they are made circular (*rond*), in the shape of a heart, of a triangle, of a shield, of a square, flat or oval, like an acorn or a ballustre, and many others: all these sorts are equally easy to make if they have not *two* catches (*anses*), or there is not a plate (*planche*) in the middle. Chapter 12 gives us several modes of brazing or joining pieces of iron together by means of melted brass (*leton*). He himself recommends a mixture of silver and brass. Chapter 13 is devoted to the art of making padlocks of a superior sort, where the key has to turn two or three times before they will open. Chapters 13–27 are occupied with details of the manufacture of locks. In Chapter 18 we have a figured cut, by which we are enabled to tell the names of the various pieces, and drawings of sundry escutcheon plates, which exhibit a general declension of art. All the designs, he says, have been executed in his shop, except the four keys above mentioned. Chapter 28 is how to make a lock which will open by different keys, by the same keyhole. These were used for treasuries, &c. Chapter 41 contains the plates and descriptions of the different wards of keys. Chapter 43 teaches us how to strengthen gates with iron-work. The heads of the nails with which the iron-work is attached are made in divers fashions. Some are made square and lozenge shape, which are inserted into the wood (*i. e.* when there is no iron-work) the thickness of the head. "Others make them 'en pointe de diamans,'

drawings of them all, and we are thus enabled to judge of their merits. They would appear to have been distinguished by a great boldness of style and breadth of execution, and by a profuse employment of figures and alto-relievos, somewhat in the style of design, familiar to us through the graver of Le Pautre, Lafage, and others of the same school. Most of those of the other works were manufactured in the Louvre, where, besides Ballin, were lodged Labarre, Vincent Petit, Julian Desfontaines the jeweller, and many others. About this time the aigrette, a bunch of flowers in enamelled gold, came greatly into fashion, and employed the ingenuity of the jeweller; and in the next reign we shall see the making of plate nearly, if not altogether, abandoned, and jewellery taking its place.

There have been few things so popular and so undeservedly so as the French taste, as it was called, and which from that country infected the whole of Europe; it was applied to all purposes, and to almost every article; probably jewellery suffered the least, as from the smallness of its parts the new style was better adapted to it than to anything else. The age had become literally one of brass. Thomas Germain may almost be called the last of the silversmiths; his death occurred in 1748, and for forty years he had executed the most important works of architecture and orfévrerie which the age had required.

The year 1760 is noticeable for another general melting of plate, in which not even the altar-table of Sens, which, as we have seen, had existed from the tenth century, was spared. The church plate thus destroyed was replaced with gilt copper, which is far from having the artistic merit of the pewter proofs of Briot; and snuff-boxes, scent-bottles, bonbonnières, cassolettes, and such trifles, took the place of all better things, and received the whole of the workman's attention.*

The great Revolution, at least as far as art was concerned, was urgently needed. On its coming it swept away the jewellery, the copper, the tinsel of the age, along with its institutions; and under Napoleon the arts and France entered into a new career with a better and livelier spirit.

To return for a few moments to the subject of enamel, we have observed that the manufacture of enamel, after the late Limoges fashion, entirely declined under the Nouailhers; but some time previous to that declension we find that a goldsmith of Châteaudun, named Jean Toutin, whose attention had been drawn to the subject by his operations in the production of the transparent enamel ornaments required in his trade, was led in his experiments to attempt to paint with opaque tints, and in this manner to revive the art of enamel painting. He limited its application, however, to small objects; his disciple, Gribelin, carried the art forward ably; to him succeeded the goldsmith Dubié, who practised at Paris, in the gallery of the Louvre. His productions were limited to rings and watch-cases; his pupil, Robert Vougier de Blois, far surpassed his master, both in drawing and colouring; he died in 1670. Another native of Blois, Pierre

or toadstool headed, or a round head channelled; others make them with a round head, with roses and leaves in relief below them." He tells us that often two or three sets of leaves are placed over one another. This is the process adopted in the iron-work of Prior Crauden's chapel at Ely. Further on he gives two woodcuts of rosettes. Others are simple rosettes beaten up and filled with lead. Chapter 44 describes how small doors are to be garnished with iron. Among other things he mentions "locquets à poussier" (thumb-latches), which are raised by a shell, an acorn, a button; olive or console; and other things. Chapter 45, to make the iron-work for doors which open and shut both sides. Chapter 46, to make doors shut of themselves. Chapter 47, how to select and cook plaster, or gypsum, for plastering hinges. Chapter 48, to make the iron-work for cabinets. Chapter 49, to make iron-work for trunks and coffers. Chapter 50, to make "boucles," (closing-rings); "heurtoirs," (knockers); "tiroirs," (handles); "platines," (washer plates, *e.g.* for latches); "escussons," (escutcheons), to put on the doors. Chapter 51, to make "targettes;" these are the bolts to keep the two leaves of the window together. They were generally cut and beaten up out of a plate of iron fixed during the process upon lead. These "targettes" were often made of tin; and Chapter 52 is devoted to the tinning of the iron ones. Chapter 53 is how to enamel them—1 oz. of "poix rousine" (rosin), ¼ oz. of "sanderas" (gum sanderac), ¼ oz. of "mastic en carme," all of which being pulverised and melted together, then the colour wanted is added. If you want blue, you take "émail fin," (some colour, not enamel); if you want red, vermilion; green, verdigris, &c.; these are mixed with the above composition: then you allow it to get cold to the consistence of paste, and with it you make little sticks, with which you enamel your work after it has been tinned. The enamelling is performed by slightly heating the piece of iron, and then passing over the places with the aforesaid sticks, the which are slightly melted with the heat. Jousse tells us that this enamel will last a long time, and is very cheap. Chapter 54 is how to make the interlaced grilles before windows, and how to make sign (enseign) brackets. Chapter 55 is how to make iron-work for wells, with four cuts of the same; these are almost Gothic. He recommends that when near a wall a bracket should be employed instead. Chapter 56, how to make the yards for scales. He says that these, if not made properly, produce great roguery, and therefore he will not point out the defects for fear of instructing evily-disposed persons. Chapter 57 describes a chair, by means of which you can advance, retire, &c. by one movement. Chapter 58, another chair, by which you can carry yourself easily where you wish. Chapter 59. Invention of an iron hand for the mutilated, by means of which you can even do work; also an iron leg. Chapter 59 (two different chapters being numbered the same) treats of the making of the screw of the vice of the blacksmith, also that for the printing-press. Chapter 60 teaches how to make a machine for milling lead. Chapter 61 is about the iron-work necessary for mounting bells, so as to make them ring with little trouble. Chapter 62 is how to colour the iron, and to put ornaments on the same after it has been coloured. This was done by means of vinegar. Chapter 63 is how to make bellows for the blacksmith. Chapters 64 to 67 inclusive, treat of the various sorts of iron and steel, and how to temper the latter. Among the various kinds no mention is made of English. Chapter 68, how to make and temper files and other tools. Chapter 69, which is the last chapter, describes a machine for making files; and Jousse winds up with an address "aux lecteurs, et compagnons serruriers," in which he assures them that many more things and inventions might be described, but that by the careful reading of what he *has* written they will not only be able to execute them, even the most difficult, but also to invent others.

* As an exquisite chaser of such trifles it would be wrong to omit mention of the distinguished artist, Dassier.

Chartier, succeeded him, and was distinguished for the grace and dexterity with which he painted flowers. From this time many artists turned their talents and attention to the cultivation of this branch of the fine arts. Jean Petitot of Geneva (born 1607, died at Vevay, 1690), and Jacques Bordier, his brother-in-law, produced works of the highest perfection; their miniature portraits from life, and from the great masters, are of extreme beauty, and were most highly valued. Vandyke was personally attached to Petitot, took the greatest pleasure in seeing him labour, and, occasionally, did not even disdain to retouch his works. Louis XIV. and his court drew largely on his talent, and remunerated him with an ample pension, apartments in the royal galleries, and an honourable position in society. Bordier and Petitot worked together all their lives; the former, painting the draperies, the hair, and the back-ground; and the latter, the faces and hands. They lived truly like brothers, without jealousy; and amassed, as Mr. Durand informs us, a large fortune of nearly a million francs, which they positively divided without a law-suit or disagreement. By them the art was carried into England, where their productions were so much admired, that two good miniature painters, Louis Hance and Louis de Garnier, turned their attention immediately to their imitation; and had the latter but lived sufficiently long, his works would have equalled, if not surpassed, his great prototype. To them, in England, succeeded a Swedish artist, of the name of Zink, whose knowledge of the manipulation of the art was, perhaps, never exceeded. Unhappily the secret of his processes died with him, as he left behind him no pupil. In France, after the days of Petitot, other eminent enamel artists arose, among whom may be particularised M. Rouquet, M. Liotard, and M. Durand, who was in the height of his career in the middle of the eighteenth century. During the whole of the same century France continued to produce pretty miniature enamels, and many an old-fashioned snuff-box and étui-case reproduce pleasantly the artificialities of Boucher and Moreau. In the nineteenth century they stand forward among the European nations in their anxiety to revive the graceful processes we have attempted to describe; and from the *ateliers* of Messrs. Wagner and his successor, Rudolfi, many very elegant imitations of both the "early" and "late Limoges," the late Italian and "niello" varieties of enamelling, have emanated. All that seems wanting in their productions is somewhat more transparency of colour and freedom of execution.

The gold and silversmiths of the present generation in France have completely revived the old reputation of the country. In Vechte we meet with an artist whose work we do not hesitate to affirm is equal to that of Cellini. In Froment Meurice, Morel, Lebrun, Marrel, Odiot, and others, the ability of the workman is happily wedded to the wisdom and experience of the master. The result is, that works of the utmost perfection are constantly issuing from the *ateliers* of the goldsmiths, and enriching the cabinets of distinguished connoisseurs; such as the Duc de Luynes, M. Devandeuve, and many others, whose pride it is to be enabled to judge and rightly to estimate every style of design and every variety of process.

GERMANY.

Of all the nations whose poverty or activity disturbed the repose, or who invoked by their independence the vengeance of the Roman Empire, there were few who displayed a more dauntless courage, or a more turbulent or restless disposition, than the various tribes which are known to historians by their common appellation of Germans. Compared with the other nations under the dominion of Rome, we find that a remarkably small portion of their country was ever subdued; and even that had to be guarded by permanent forts and colonies. Cologne, Mayence, Trèves, and many other towns, deduce their origin from these colonies, and it was in them that the arts of antiquity were firmly preserved for Germany, during what is termed the "dark ages," until the advent of better and more prosperous times.

As to the Teutonic races themselves, we may gather from the interesting details preserved to us in the "Germania" of Tacitus, that they had scarcely any arts, and but little civilisation; and it was to this circumstance that they were probably indebted for their ability to preserve their liberty. With the exception of a few scanty chronicles (such as the writings of Eginhard) respecting the meteoric empire of Charlemagne, we learn but little respecting the arts until the time of Otho II., in 972. During this long and dreary period, it is observed by Dr. Kugler, that the seals of the emperors are almost the only materials preserved to modern times which afford material for judging of the style of what little art was practised in working the metals. These betray a decidedly antique type; which, although rude, is totally unmixed with the Byzantine element. It is most probable that this type is due to the traditions of the old Roman military colonists, for we know that, at the commencement of the fifth century, both Cologne and Nuremberg were famed for their works in gold and silver, and that in earlier days the former station had been celebrated, even at Rome, for the splendour of its buildings and the riches of its officers. The munificence of the Emperor Charlemagne had likewise richly ornamented the "dome" of his new city of Aix-la-Chapelle, and it was there that he was buried with imperial pomp and with all the insignia of majesty. These insignia, unfortunately, could not escape the avarice of his successors; and he owed to Frederick Barbarossa both his canonisation and the robbery of his tomb. However, there is every reason to believe, as we have remarked in our notice of French history, from the sword and crown (the only relics from which we have an opportunity of judging) that none of these ornaments were due to the German artists, but rather to those of Italy and Byzantium. As to the bronze door with which the cathedral is said to have been adorned, the character of its workmanship is equally uncertain.

At the end of the tenth century a vast change took place. The Emperor Otho connected himself by marriage with the Byzantine court, and from this time we find the whole of the metals imbued most strongly with the characteristics of that style. Thus, at the commencement of the next century, the altar-frontal given by Henry II. to the Cathedral of Basle, displays most unmistakeable traces of the influence of the Greek school. This magnificent piece of goldsmiths' work was made by order of the Emperor as an offering to St. Benedict, in gratitude for a miraculous cure which had taken place at his intercession. It consists of an arcade of five arches supported by pillars, in the centre of which is our Blessed Lord; the others being occupied by representations of the archangels Michael, Raphael, and Gabriel, together with St. Benedict himself. This interesting relic, after remaining for more than 800 years in the cathedral, was sold by auction in 1834, and was brought to England in 1843, when it was described in a very talented paper in the "Archæologia" by Mr. Albert Way.

The crowns of this Emperor and his Empress, which are preserved in the Royal treasury at Munich, convey

a very high impression of the skill of the Byzantine workmen or their German pupils:* for that the Byzantine artists, who had been employed by his father, had by no means left the country, is amply proved by the splendid cover of the book of prayers in the same place; in which a Latin inscription bears King Henry's name, and the enamels have the Greek monogram of our Lord.

The example set by the holy monarch, St. Henry, was closely followed by his clergy; and the accounts of the donations made by Willigis, archbishop of Mayence, and Bernward, bishop of Hildesheim, to their respective cathedrals, would make up almost a history of themselves. The former, who died in 1011, besides a vast quantity of gold and silver vessels, and tapestry, presented an immense crucifix, the cross of which was entirely overlaid with gold plates; and the figure, also in gold, was so formed that it was possible to separate its limbs: carbuncles occupied the place of eyes; and the cavity of the body (which was above the natural size) was made use of to contain relics. We can form some idea of the value of this work, when we know that the gold alone weighed 600 lbs. There was also a vessel cut out of onyx, with a Greek inscription; thus clearly proving its foreign origin.

Bernward's gifts,† if not so splendid, were equally useful to the arts, for he himself worked upon many of the objects; of which the church of St. Mary at Hildesheim preserves a fine specimen in a gold cross, displaying the general characteristics of the processes most popular in the age: such as filagree and the insertion of a profusion of precious stones. There are also in the same church two lamps, which we are told by the inscriptions were manufactured by one of his pupils. But by far the greatest of his works were those in bronze: the art of casting which, there can be little doubt, had been introduced by Byzantine workmen at the end of the tenth century. The first gates (besides those cast for Aix-la-Chapelle, in the time of Charlemagne) were, as their inscription tells us, those at Mayence. They consist of plain panels with a total absence of figures. In the doors, however, with which Bernward adorned his cathedral, were contained as many as sixteen scenes from the lives of Adam and our Blessed Lord. Another work was the celebrated brass pillar, which originally stood in the court of the Cathedral of Hildesheim; this has no fewer than twenty-nine groups in relief, representing the life of Christ, which wind up the column in a spiral, like the monuments of Trajan and Marcus Aurelius at Rome. The capital has, unfortunately, been destroyed.

Doctor Kugler tells us that both these works betray decidedly indications of the prevalent style of Greece, and, if not executed by artists from that country, at all events show in how short a time their German brethren, such as Bernward (who died in 1022), had become imbued with it.

During the same century, a vast number of smaller works in bronze were executed for the service of the Church; but as they have been for the most part removed from their original situations, it will, perhaps, be sufficient to mention the gates at Augsburg, which were cast in 1070. The ornament of these consists of a great number of figures in low relief, under very shallow semicircular arches: they are drawn, however, with great spirit, and represent scenes from the Bible, together with subjects of pure fancy, one or two of the panels being repeated. Shortly afterwards, in 1080, we have the tomb of Rodolph of Suabia in the Cathedral of Mersburg, which bears equally strong marks of the Byzantine style. The Cathedral of Goslar contains the celebrated bronze altar, which was decorated with jewels, in a similar manner to the great candelabrum at Milan (l'Albero): the work of the kneeling figures which support the altar is remarkably sharp and spirited. The imperial chair, from the same place, now in the Armoury of the Prince Karl of Prussia, is of nearly similar workmanship.

The twelfth and thirteenth centuries are remarkable for the large number of châsses destined to receive the relics of saints, which were produced in Germany; these châsses, for the most part, exhibit the same design: viz. a frame-work of wood in the shape of a box, with a gabelled top, covered with plates of gold; upon this are applied various architectural features (also of wood covered with gold), consisting generally of a series of ornamental arches at the sides, and triple ones at the ends. These arcades are for the most part enriched with cloisonné or champlevé enamels, precious stones, and filagree; and within them are placed statuettes, in most cases representing the twelve Apostles, with the patron saint at the ends. These

* A valuable testimony to the skill of the German artificers of (probably) this period is borne by Theophilus, who, in his remarkable "Schedula diversarum Artium," proposes to afford information to his pupil in all the arts practised by "industrious Germany,"—"quicquid in auri, argenti, cupri, et ferri, lignorum lapidumque subtillitate *sollers* laudat Germania."

† For a notice of Bishop Bernward and his works, see Fiorillo, "Geshichte der Zeichnenden Künste."

figures are always beaten up in three-quarter relief (the heads being quite free, *en ronde bosse*), and are afterwards filled up with mastic and fixed to the shrine: the roofs are decorated in a similar manner with medallions, &c.

The first of such works, in point of date, is that of St. Godehard at Hildesheim; it is four feet in length, and was probably executed after the year 1131: the next is the châsse of Nôtre Dame at Aix-la-Chapelle,* presented by Frederick Barbarossa in 1150. This exquisite object is decorated with cloisonné enamels, and is executed in a most highly-finished style. We must not forget to mention the splendid chandelier which was given by the same Emperor, and which now hangs over the tomb of Charlemagne. This object bears a remarkable impress of Eastern art, and indeed we should almost fancy it to be of Arabic workmanship, but that the Latin inscription and the enamelled figures of angels forbid any conjecture of the kind.

The magnificent shrine of the Three Kings of Cologne, which dates from the commencement of the thirteenth century, betrays remarkable skill and art in the treatment of the figures, and the heads are probably the best specimens of Byzanto-German art which can now be found. The enamels consist both of champlevé and cloisonnés, though it is not at all unlikely that the former may have been added when the châsse was repaired by the Archbishop Philip of Hindsburg.† The figures in this case are in the form of exceedingly low relief, and still betray some indications of Byzantine feeling.‡

Gerbert, in his "Vetus Liturgia Alemannica," has figured a chalice of the twelfth century, belonging to the monastery of Weingart, most beautifully enriched with heads of saints enamelled in the knop; the Nativity, Baptism of our Lord, &c. on the bowl; and subjects from the Old Testament on the foot, round which is inscribed, "✠ Magister Cuonradus de Hūse ar(gentarius) me fec(it)."§ This object is especially interesting, as giving us the name of the skilful workman by whom it was wrought, and showing the early proficiency of the Germans in the art of enamelling. In the Cathedral at Komburg, in Suabia, is preserved a splendid altar-table, or frontal, of a transition period antecedent to 1200, and very beautifully enamelled.

Very shortly after the date of these objects the introduction of stump tracery, and an excessive use of interpenetration, distinguished alike the architecture and goldsmiths' work of Germany; and although nearly every church except Aix-la-Chapelle has lost its treasures, yet we have many original drawings, taken before the great revolutionary wars in 1799, which show us that the greater part of the objects were executed in this style. It is true that it does not obtain to any great extent at Aix-la-Chapelle; but we must recollect that there are many reasons why the treasures preserved in the cathedral of that city should present a greater diversity to those in any other. First of all, they were not entirely given by natives; secondly, Aix-la-Chapelle was on the high road to Rome, France, and Flanders; and, thirdly, the fact of the remains of Charlemagne being deposited there was a reason for those kings and nobles who styled themselves his descendants to prefer this place above all others to make their offerings; and when we reflect that those kings and nobles belonged to different nations, each with its own peculiarities of art, we shall cease to wonder at the variety displayed in that wonderful collection.

In the British Museum there is a manuscript (Additional MS. 15,689), executed at the beginning of the sixteenth century, which contains 121 drawings illustrating the reliquaries then preserved in the Cathedral of Bamberg. Although, unfortunately, these drawings are far too rude to give much information as to the artistic value of the articles represented, they are, at all events, useful in exhibiting the forms of the vessels, and also as showing us what a large reliquary-chamber of a cathedral church might then be supposed to contain. Accordingly, we here find the aforesaid reliquaries in the most dissimilar shapes: some are in the forms of little tryptichs mounted upon feet; in another, a tree springs from a base and supports two angels. Some of the relics are kept in chalices, and some even in horns, ewers, and book-covers. This treasury also contained above thirteen arms and nineteen heads of various saints, all encased in silver representations of the member enclosed: thus an arm of St. George is in a case in the shape of a mailed arm and gauntlet. There

* Beautifully engraved by the Abbé Martin, in his "Mélanges Archéologiques."

† We may remark, however, that they alone are to be found in the reliquary which once contained the arm of Charlemagne, now in the Louvre, and one of which represents Roderick II., A.D. 1212 to 1250. Dr. Kugler mentions two more shrines,—St. Elizabeth at Marberg, of the thirteenth century, and that of St. Patroclus at Soest, made by the goldsmith Rigefried in 1313.

‡ From the end of this century to the latter end of the fifteenth, when the angular drapery of the schools of Nuremberg and Augsburg came into fashion, the style of Germany, as regards figures and goldsmiths' work, is that of all Europe; thus the celebrated chalice preserved at Mayence, and published in this work (Plate XLIX.), and which belongs to the commencement of the fourteenth century, might equally well be assigned to French artists, though claimed by the German antiquaries, as well as the enamelled hanap of the same period, which is preserved in the same cathedral: both these have translucid enamels, and both betray the failure to produce the ruby-red upon silver.

§ Pugin's "Glossary of Ecclesiastical Ornament and Costume," text by the Rev. Bernard Smith, page 56.

were also a vast number of small coffers and crosses containing pieces of the true one, to say nothing of two waterpots used at Cana of Galilee. The last drawing of all is a grand procession, conveying a large châsse, in front of the west end of the cathedral.

As much of the goldsmiths' work which remains was executed in *laton*, or latten, it will now be necessary to go back a little and examine what progress the art of casting in bronze had made since the end of the eleventh century. That it still continued to be practised with great success may be seen by the monument of Henry the Lion in the cathedral court of Brunswick, and the bronze doors now in the church of Saint Sophia at Novogorod, where the portrait of Archbishop Wichmann of Magdeburg, and the names of Riquin and Waismuth, the workmen, point out the country of their fabrication. The ornaments consist, as usual, of scenes from the Bible and allegorical and mythological subjects. The early part of the twelfth century presents us with the celebrated brass font in the cathedral of Hildesheim, the top of which is six feet high. It is covered all over with the usual biblical and allegorical subjects in relief, and is supported by four kneeling figures representing the rivers of Paradise. In Plate XV. we have engraved an interesting specimen of bronze-work from the Rath-haus at Lübeck. We greatly regret that so many of the productions of this century should have perished; for, with this exception, we have but little left. No doubt the reliquaries, brasses, candelabra, and fonts, were no less beautiful than the architecture; but we have to wait until the end of the next century before we find any such monuments in abundance.*

The statue of St. George, at Prague, which is placed in the court of the Schloss before the cathedral, was cast by Martin and George von Clussenbach, in 1373; but, unfortunately, it is said to have been recast in 1562. It is not until the end of the fourteenth century that the series of brass fonts, which are often adorned with very elegant figures, begin. One in the Cathedral of Bamberg bears not only the date, but also the name of the artist. To this period belong also most of the monumental brasses which have as yet been discovered in Germany: such as those at Lübeck, 1317 and 1350, and that at Stralsund, 1357; but they appear to have soon gone out of fashion, and to have been replaced by very low reliefs of the person represented. The candelabra were often made of imposing dimensions, and, with their seven branches, imitated the candlestick of the Temple at Jerusalem. A thin species of brass (laton) was often used in the manufacture of church plate when the expense prohibited the use of more precious metals, and several specimens of this manufacture are given in Plates VIII., XXI., XXVII., and XXXV. of this work. Iron was also worked into most elegant lamps (see Plate XVII.), hinges (see Plates IX., XIII., and XXIII.), and door-handles (see Plates VI., XXXI., and XLVIII.), many of which have been published in the works of Professors Heideloff and Böttcher,† exhibiting all the excellences, and also some of the defects, of a florid Gothic style.

The art of metal-work as well as of architecture progressed until the middle of the fourteenth century, when the great manufacturing towns of Nuremberg and Augsburg set the example of a new style, which was by no means an improvement on the old: the figures become shorter and more ill proportioned, the features are for the most part exaggerated, the hair assumes the appearance of a wig, while the drapery faithfully imitates its prototype, the damped paper with which the lay-figures were clothed. This style took possession, more or less, of the whole of Germany, and an account of one of the most celebrated artist-families of Nuremberg will be but a narration of the operations of this change.‡ In the Stadt-kirche at Wittemberg§ is a bronze font by "Herman Vischer the elder," cast at Nuremberg in 1457, and ornamented with figures of the apostles; which, however, are nearly the same as the common type then used, with perhaps a slight infusion of the antique. However, we shortly see Peter Vischer, his son, in the tomb of Archbishop Ernest at Magdeburg, finished in 1495, adopting the sharp angular style, which was in vogue at that time with all the Nuremberg artists. Doctor Kugler has accused Adam Kraft of this invention; but most probably it was merely a method to save the trouble of invention, and to get as many works executed as soon as possible, for we must always recollect that Nuremberg was eminently a manufacturing town.

Other works of Peter Vischer's remain in this style, such as the monumental tablet of Bishop John of Breslau, in 1496; however, it has been supposed, from the monuments attributed to him in the Cathedral of

* We must except the very remarkable lead font in the cathedral at Mayence, of this date.

† "Die Ornamentik des Mittelalters, von Professor C. Heideloff."

‡ For full details concerning the lives and works of these masters, see "Die Nürnbergischen Künstler geschildert nach ihrem leben und nach ihren werken," and "Nachrichten von den vornehmsten Künstlern und werkleute in Nürnberg." Von. J. Neudörffer.

§ Schadow Wittenberg's Denkmaler.

Bamberg, that in his early life he had followed the usual style, and that this Nuremberg treatment was only a vagary, for we afterwards find no traces at all of it in his grand work, the shrine of St. Sebald, at Nuremberg (1506 and 1519). Two designs were made for this, one of which was an entirely Gothic structure, and has been published by Heideloff.* The actual edifice is in that style which is generally known as the German Renaissance, and which may be described as a little heavier and coarser than that of France.

In this work the figures may be divided into three parts, each displaying a different style. The first, including the statues of the twelve apostles and the twelve fathers of the church, exhibits little or none of the antique element, and the figures might be supposed to have been executed a hundred years earlier, the draperies being exquisite. Secondly, in the bas-reliefs of the legend of St. Sebald this style is more united with the antique; but the figures have great spirit and life. And, thirdly, in the decorative figures, which are essentially parts of the architecture, such as the pedestals, &c., the style is almost entirely an imitation of the antique, though perhaps displaying more eccentricity than is usually found in the works of the ancients.† It may be remarked, that many of the parts of this bronze have never been cleaned up with the chisel, and are in many respects just as they issued from the mould.

Many other works are known of Peter Vischer's, of which the best is a bas-relief at Ratisbon, and another one of the Coronation of the Virgin at Wittemberg; besides the monument of the Elector Frederick, in the Schloss Kirche of the same place. It is questionable whether Peter Vischer himself was ever in Italy; however, it is well known that his eldest son, "Herman Vischer the younger," made several journeys, and on his return brought back many examples, which were of great use to his father and brothers. We know from the example of the great Albert Dürer, and from the frequent notices in Vasari of "diversi artisti Fiaminghi," that it was the common practice of the artists of Germany to make this journey for the purposes of study. Of Vischer's school we may merely mention Herman Vischer the younger, his son, who erected a monument to the Elector John at Wittemberg, and John Vischer, the younger brother; together with Pancraz Labenwolf, who executed the pretty statue of the countryman with the goose, which decorates the well of the Frauen Kirche at Nuremberg.

It is also necessary to mention the tumulary medallions in bronze with which the cemetery at Nuremberg is filled. The earliest date from about the middle of the fifteenth century, and the remainder continue down to the end of the seventeenth. The design consists for the most part of circular medallions, containing either the arms of the deceased or Scripture subjects. They are most beautifully executed, and chiselled up with extreme care.

At Innspruck is the celebrated monument of the Emperor Maximilian I., which consists of a sarcophagus, on the cover of which is the bronze statue of the emperor in a kneeling attitude; and between the columns of the church are twenty-eight colossal figures of ancestors of the house of Hapsburg. The monument itself was the work of Alexander Collin of Mechlin (1521–1612). The statues were executed by Stephan and Melchior Godi, and Hans Sendenstrauch, though they are generally ascribed to George Seffler.

During the whole of the sixteenth and seventeenth centuries Augsburg and Nuremberg were but two vast *ateliers*, where works of all descriptions and in all materials were either manufactured in quantities, or made separately as objects of art. No material escaped the skill and industry of these workmen: even the stubborn iron was chiselled into sword-handles of surpassing delicacy. They enriched arms and armour with damascenings and enamels like the Italians, and imitated the beautiful jewellery of the French, besides carrying to the greatest perfection their own national arts of wood-carving and casting in bronze, with a thousand other manufactures more or less important. In the earlier of these several works the influence of the Italian style seems to be but little felt,—except, perhaps, that they exhibit a freer and easier treatment than prevailed in the Gothic times: the feeling that runs through them is rather that of the native school, and points more particularly to Veit Stoss and Peter Vischer. This view is confirmed by the fact that the style of the architectural ornaments continues to be the Cisalpine Gothic, with for some time but little mixture of Italian.

* Who attributes it to Veit Stoss.

† The remarks of Professor Heideloff throw some little light upon these anomalies of style in the works of Peter Vischer, whose talent he estimates, as we conceive, somewhat too disparagingly. In the first place, he had five sons, who all worked with him, and may have differed both in ability and taste. It appears probable that in his earlier works frequently, and occasionally in his later, he availed himself of the ability of Veit Stoss the celebrated wood-carver, to make the patterns for his castings.

However, by the end of the sixteenth century their own peculiar style, of which Albert Dürer had been the greatest master, had entirely given way to Italian influence; and in the seventeenth century every trace of the Gothic is entirely lost. Thus the three fountains at Augsburg are in exactly the same style as that which then pervaded the whole of Europe, and may briefly be described as an imitation of the antique, with fuller and less graceful proportions.

In the latter part of the sixteenth and beginning of the seventeenth century the manufacture of cabinets and caskets, of curious and beautiful workmanship, was brought to great perfection; and, although chiefly the work of what we now term the cabinet-maker, their richness was commonly enhanced by the labours of the painter, the carver, the lapidary, and even of the engraver, but most of all by the *goldsmith's work*, which was profusely lavished upon them.* Occasionally, the various compartments of a single cabinet, the opening of which is not an easy task to the uninitiated, were so adorned with various objects of art and art-manufacture, as to afford a general view of the state of the arts at the time of its execution. The work in these cabinets may be considered specially to exemplify the state of the arts in Germany, as the most important of them appear to have been made at Augsburg;† several of these are preserved in the Kunst-kammer at Berlin. The most important one is the so-called cabinet of Pomerania, which is undoubtedly the finest work of the kind that was produced in Germany. It is built up of several parts, making a total height of about five feet, a width of three feet and a half, and a depth of about three feet. Every compartment of this cabinet is filled with the most varied specimens of art-workmanship in all its branches; the table upon which it rests is also richly adorned, but would seem to belong to a somewhat later period.

In the original description (still preserved), written by the director of the work, this cabinet is called a *writing-table*, which appears to have been the general designation of such objects at that time. It was made at Augsburg by order of Philipp II., duke of Pomerania (who died in 1618), and was completed in 1616: the design was the work of Philipp Hainhofer (1578 to 1647), who also superintended the execution. He was distinguished as well from his political position as for his high scientific attainments and love of the arts, some of which he practised with considerable success: his collections were also of great importance.

In the year 1617 Hainhofer went to Pomerania, to present this cabinet, with another work of the same kind, to the Duke; and the detailed journal which he kept on that occasion, and which has been published,‡ gives us a curious insight into the spirit and manners of his age. In the preface to this work we are informed that Hainhofer was himself both painter and architect, but from his intimate connexion with other artists in various branches he was able to effect far more than his individual exertions could have done unassisted. His influence over his coadjutors appears to have been so great, that he may be considered to have directed the taste of the age. Hainhofer, like most of his contemporaries, particularly delighted in allegorical compositions; and in his most important works he appears to have endeavoured to bring together into one grand whole all branches of the arts. A very great variety in the technical execution, carried out with considerable success, may have been influential in producing these remarkable compositions; they must certainly be regarded as possessing great originality, although the idea intended to be conveyed by the artist is frequently obscure, and is scarcely rendered more intelligible by his own explanation. These beautiful fruits of a most flourishing epoch of art, which was unhappily interrupted by the Thirty Years' War, form a remarkable division in the history of the arts in Germany, distinguished by the production of objects of *art-manufacture*, in which the artist and workman were either united in the same person, or at least intimately associated.

In Hainhofer's description of his own work he has given a list of all the different workmen engaged upon it, with their trades or professions; from which we learn that the gold and silversmith's work was executed by Godtfried Münder, David Altensteter, Philipp Jacob Pehner, Niclausz Kolb, Matheusz Walbaum, Michael Gasz. It consists of a number of statuettes in silver parcel gilt—of repoussé reliefs

* Dr. Kugler's careful description of the objects in the Royal Kunstkammer at Berlin contains some interesting particulars respecting these cabinets.

† P. Von Stetten "Kunst, Gewerb, und Handwerksgeschicte der Reichstadt Augsburg."

‡ Philipp Hainhofer's Reise-Tagebuch, &c.; with Notes by Baron v. Medem, and the Director of the Kunstkammer, Von Ledebur. Stettin, 1834.

of allegorical groups and single figures, with a great variety of filagree inlaying—engraved and other ornamental work in the cabinet itself; besides which a considerable portion of its rich contents consisted of useful and ornamental articles of goldsmiths' work. The iron-work, we are told, was done by Hans Jacob, Kuenlin and Jois Miller. Even the maker of the cover for the protection of this precious work is not forgotten: his name is Jonas Heckhinger. The only one of the artists whose name is recorded *in extenso* on the work itself is Ulrich Baumgartner the cabinet-maker, with the date 1615, who seems to have been associated with Hainhofer in executing other similar works: the most important of these was that presented in 1632 by the town of Augsburg to Gustavus Adolphus of Sweden, and for which Hainhofer received the sum of 6000 florins. It is now preserved in the library of the University at Upsala.

At length came the Thirty Years' War, which for a time entirely ruined the trade and arts of Germany, and by the latter end of the century both Augsburg and Nuremberg had sunk down to the condition of the majority of the surrounding towns. Some few of the goldsmiths still continued to occupy a high place for the excellence and finish of their plate and jewellery, and the group of hanaps with which the kindness of Mr. Sebastian Gerard has permitted us to present our readers (Plate XXVI.) is a very fair specimen of their talents in this line. One of the most interesting collections of German municipal plate is that preserved in the Town Hall at Lunenburgh, in Hanover, of which many quaint specimens are figured in the "Moyen Age et la Renaissance."

Among the most celebrated artificers of Nuremberg and Augsburg may be mentioned the family of the Jamnitzers, who worked during the whole of the sixteenth century, and of the principal of which, Wenzel Jamnitzer (1508 to 1585), a medallion, executed by himself, is preserved in the Kunstkammer at Berlin. They were followed by D. Kellerthaler, Jonas Lilber, Hanz Pezolt, and Matthäus Walbaum, who flourished at Augsburg in the year 1615.

On the style of all these artists the productions of that set of engravers, known as the "Petits-Maîtres," exercised a very important influence. The most celebrated of these masters, who carried to perfection that ornamental style of composition in which Martin Schönhofer and Albert Dürer had so much excelled, were Albrecht Altdorfer, Heinrich Aldegrever, George Pens, Hans Sebald Beham, Virgilius Solis, Theodor de Bry, and Jean Collaert. The plates executed by these masters consist principally of various designs for metal-work of very great beauty, and drawn with an astonishing vigour and delicacy. A very interesting series of fac-similes of these works, many of which are now extremely rare and costly, has been published of late years in Paris, and has no doubt proved scarcely less useful to the modern French jewellers than the original designs were to their German predecessors.

Somewhat subsequently to the period when Augsburg and Nuremberg were at their climax of reputation, the schools of Dresden, Frankfort-on-Maine, and Cologne, became distinguished, and in the imperial collection at Vienna, the Grüne Gewölbe at Dresden, and the Royal Treasury at Munich, ample evidence of the ability of the artists of those localities is preserved. Among the principal may be mentioned Theodor de Bry and Collaert, who, though (as we have already stated) excellent engravers, are believed to have executed many objects in metal-work. Raimund Falz and Johann Andreas Thelot, who lived at the beginning of the eighteenth century, were exquisite silver-chasers, and agreeable specimens of their productions are to be met with in the Grüne Gewölbe at Dresden.

The greatest name of all is that of J. M. Dinglinger, who executed the celebrated piece of enamelled jewellery representing the Court of Aurungzebe, made for the Elector of Saxony; but although the finish of the performance is something wonderful, we cannot help regretting that so much pains and so long a time (eight years) should have been occupied upon what, after all, is but a mere toy.

During the latter portion of the eighteenth century Germany betrayed no very marked ability in the cultivation of the arts of metal-work, if we except the wonderful iron castings of Berlin. In them science has done far more than art, and it is frequently a matter of regret that so much skill should be lavished upon the execution of indifferent designs. In silversmiths' work great excellence has been obtained, and in the family of the Wagners of Berlin great artistic and manipulative ability has been concentrated.

In bronze many admirable productions have been executed, and the utmost perfection of scientific casting obtained, especially in the foundry of Messrs. Stieglmeyer and Müller of Munich, and Fischer of Berlin, by whom, among many other great works by Rauch, Rietschel, and others, was cast the original group of the

Amazon by Kiss. By the former firm the colossal Bavaria, and many of the most important Munich decorations, were admirably turned out.

The last-mentioned is unquestionably one of the greatest works of modern times, and was executed through the liberality of the king, to whose love of art we owe the statues (also colossal) of his ancestors in the throne-room of the new palace at Munich. These are professedly in imitation of those round the tomb of Maximilian at Innspruck, and they by no means suffer by the comparison. Indeed, through the ability of artists such as Schwanthaler, the Munich School of Sculpture bids fair to rival its yet more celebrated one of Painting.

It would be unfair to conclude this brief notice of the metal-work of Germany without alluding to the success which has of late, in Prussia particularly, attended the application of zinc to ornamental casting. It is only recently that this attempt has been made, and considering that the first experiment in the Royal Ironfoundry at Berlin was only made in the year 1832, the progress since that year is truly remarkable. The great mind of Schinkel was one of the earliest to perceive the capabilities of this material to minister to the requirements of art, and in a memorandum of his, dated the 3d of May, 1840, he eloquently urged its immediate adoption as a substitute for bronze, &c. The Prussian public were not slow to avail themselves of the beautiful objects which issued from the foundries of M. Devaranne and of M. Geiss, the two most distinguished proficients in the processes of fabrication. The finish of the splendid group of the Amazon, which was cast by M. Geiss, and formed so conspicuous an object in the Great Exhibition of 1851, must have convinced every one that Schinkel's anticipation of the perfection to which the manipulation of zinc might be carried was by no means unreasonable.

SPAIN.

No reasonable doubt could exist of the ancient occupation of the Celtiberian soil by the Romans, even if there were no other evidence of the fact than that afforded by the jewellery worn by the Spanish peasantry of the present day. In Valencia especially the personal ornaments of the women have been remarked by travellers as singularly classical in form. Mr. Ford* observes that "the roll of hair, *el mono*, is pierced with a silver-gilt pin, with knobs, the *acus crinatoria* of Martial (ii. 66; Ap. Met. viii. 543); it is called *aulla de rodete;* the silver-gilt comb is the *pinteta*, and one of a singular triangular shape is called *la pieza, la llasse;* this is frequently engraved with the great local patroness, '*Nuestra Senora de los Desamparados;*' the cross is called *la creu.* As the women are very superstitious, talismans and small penates, or figures of saints in silver, are sold in great quantities; as also little hands and horns, the old Phallic antidote to the evil eye, *el mal de ojo*, which is dreaded here, as among the Pagans, Moors, and Neapolitans." Such a retention of the ancient types of form is more particularly to be traced in those districts in which the great monuments of the Roman occupation still exist in their grandest form. Pliny tells us that the Spanish province comprised no less than three hundred and sixty large cities, and we know that, up to the time of Constantine the Great, its three provinces, Bœtica, Lusitania, and Tarraconensis, were looked upon as the most important of the Roman colonies. The early intercourse which had been maintained between the Phœnicians and the inhabitants of the southern coast of Spain had no doubt initiated the latter people into many of those vitreous processes which there appears every reason for believing may have originated in Africa, and which the western tribes of Europe are supposed to have acquired at a very remote period, through their commercial relations with the Punic races.†

Such opportunities of acquiring a knowledge of the various processes of metal-working, coupled with the fact of their abundant mineral resources, no doubt tended to an early developement of the power of the Spaniards to produce every variety of objects in such materials. This power, during the whole history of the country, has been fostered by an unprecedented succession of accidents. Thus, scarcely had the Roman power become extinct, and the Gothic element supervened, when the aid of the Greeks of Byzantium was invoked (by Athanagild, in the year 574), and a partial occupation of the country by the subjects of Justinian and succeeding Emperors took place: from which circumstance the arcana of contemporary Byzantine art were probably revealed to the Spaniards. No sooner was the Greek influence destroyed than the Catholic element was introduced, and that intimate relationship which has ever been maintained by Spain with Rome commenced. Stirred to devotion in its earlier ages by the example of such saints as Fulgentius, Isidore, and Leander, and subsequently goaded into superstition by the passionate eloquence and fervid imagination of such men as San Domingo and his follower, San Vicente, the zealous Spaniard was induced to purchase with open hands the ministrations of the priesthood and the intercession of the saints. Riches poured in upon the Church from its earliest ages, and by its superabundant wealth the arts in general were benefitted, and that of metal-work in particular. The contributions of the faithful very frequently took the form of costly pieces of gold and silver plate; and the great shrines and churches throughout Spain, prior to the French invasion, could have furnished a display of magnificence unrivalled by that of any other country of Europe.

The most remarkable specimens of such objects still left to examine are, according to Mr. Ford, "the

* Murray's "Hand-book for Travellers in Spain," p. 189. Second edition.

† It is singular that Saguntum, the very spot in the neighbourhood of which most of the singular ancient forms of jewellery, to which we have alluded, are yet preserved, should have been successively occupied by Hannibal and Scipio Africanus.

altar candlesticks, candeleros, and blandones; the calix, or sacramental cup; the porta pax, in which relics are enclosed and offered to devout osculation; the cruces, crosses, baculos, and croziers, and the vergers' staves. The traveller should always inquire if there be a *custodia*, whether of silver (*plata*), or of silver-gilt (*sobredorada*). They are called *custodias* because in them, on grand festivals, the consecrated host is kept. The *custodia* containing the wafer, thus guarded, is deposited on Good Friday in the sepulchre (*el monumento*). This is a pile of wood-work which is put up for the occasion, and in some cathedrals—Seville, for instance—is of great architectural splendour."

Some idea of the system of spoliation which was carried on in Spain during the Peninsular war, and of the enormous riches accumulated about the principal shrines, may be derived from Mr. Ford's notices of the present condition of the shrine of the Blessed Virgin at Guadeloupe. "The dresses and wealth in it once," says he, "were prodigious. The silver lamps, &c., were carried off by Victor, with the glorious *custodia* made by Juan de Segovia; then disappeared the silver throne of the image, the silver angels, the eighty silver lamps, the diamonds, pearls, gold, and jewels, the offerings of kings. He carried off *nine cartloads* of silver. But he was an adept at this art, having before pillaged the real Loretto of Italy: he, however, left the image behind, although carved by St. Luke. Those who wish to know the items of his spoil, and the wonderful relics of this sanctuary, are referred to 'Historia de Nuestra Señora de Guadalupe,' folio, Gabriel de Talavera, Toledo, 1597." Of such notices many more might be quoted, since it is really delightful to recognise Mr. Ford's wholesome hatred of these iconoclasts.

Besides their ordinary opportunities of acquiring information concerning the technical processes involved in the production of these objects, the Spaniards were peculiarly aided by their knowledge of the practices in use among the Moors. Evidence is by no means wanting that beautiful objects in the various metals had been made at a very early period throughout Mesopotamia, and particularly at the town of Mossoul. These consisted, for the most part, of vessels composed of a hard alloy of copper and tin,—a species of bronze,—inlaid with silver wire, and sheet silver stamped or cut to elegant patterns of interlacings, conventional foliage, &c. French antiquaries have delighted in tracing, in the patterns of the early Limoges champlevé enamels, not only an imitation of these ornaments, but others actually derived from the Cufic characters in which the inscriptions on the productions of Mossoul were engraved.

The inveterate hatred which subsisted between the Moors and Spaniards has, unfortunately, caused the almost total destruction of monuments of this description in Spain; but there can be little doubt that the inhabitants of that country benefited largely by the skill which their Moorish brethren originally derived from their intercourse with the East and with Byzantium. The art-workmen of the middle ages held in high estimation the admirable works of the Moors, and Theophilus distinctly refers to their skill in the manipulation of metals.

The style of the ancient ecclesiastical plate of Spain varied with the several gradations of Gothic architecture; and, as we approach the fifteenth century, it so far exceeded in magnificence the character of other monuments of the period, that its name (*plata*) was actually adopted to designate the most highly-finished style of architecture which has, probably, ever subsisted in any country;—namely, that known as the *Plateresco* style. In that beautiful variety of Spanish architecture the details are wrought rather as in a highly-finished piece of plate than a work in stone or marble. When the Plateresco style advanced into that of *Herrera*, the character of the contemporary metal-work changed in the same proportion; and in its last condition it degenerated into a feeble imitation of *rocaille* and *rococo*, known in Spain under the name of *el Churriguerismo*. Previously, however, to this last state of degradation, it doubtless acquired some peculiar features from the association of the Spaniards with the inhabitants of the Low Countries.

That glorious era in metal-working which corresponded in point of time with the developement of the Plateresco style of architecture, could only have been maintained by the aid of immense resources. These were offered in the acquisition of the New World by the adventurous science of Columbus, and the fierce energy of Cortez and Pizarro. Mr. Ford remarks that, "fortunately for Spain, at the very moment of her greatest influx of bullion, and in the age of Leo X., there arose a family of goldsmiths, who carried the art of plate-making to its highest perfection. The founder was Enrique de Arphe, or Arfe, a German who settled at Leon about 1470, and worked in the then prevailing rich florid Gothic style. His son Antonio, following the changes of fashion, adopted the Græco-Romano tastes; while his grandson, Juan de Arphe y Villafañe, born at Leon in 1535, excelled in the human figure, and was the greatest artist of his family. Antonio

and Juan settled at Valladolid, which was then the court of the great Emperor Charles V. These De Arphes were almost entirely employed by the rich cathedrals, churches, and convents of Spain, for which have been worked those magnificent articles after which every traveller should inquire when visiting ecclesiastical treasure-rooms; asking particularly whether they possess any specimens of these elegant masters. This family not only wrought these beautiful objects, but created and fixed the style of religious plate in Spain, which we term Cinque-cento, from the period, but which is called in Spain *el gusto plateresco*,—the silversmith, or Berruguete *gusto*. Juan de Arphe y Villafañe, who was appointed by Philip II. master of the mint at Segovia, published a treatise on his art, with exact designs for every piece of church plate; and his elegant models have fortunately been generally adopted and continued. This work, which every collector should purchase, is entitled 'De Varia Commensuracion;' and has gone through many editions. Those now before us are, first, that of Seville, 1585, by Andrea Pescioni; and Villafañe was fortunate in securing for his printer this Italian, who had a kindred soul, and whose works are among the few in Spain which can really be called artistical. There are the editions of Madrid, 1675, by Francisco Sans; Madrid, 1773, by Miguel Escribano, in which the original woodcuts have been copied. The sixth edition has some additions, by Pedro Enguera; and there is a modern edition, with new plates, by Josè Assensio y Torres, in two volumes folio, Madrid, 1806. The work embraces the science, with plans, details, geometry, dials, the anatomy of man and animals, architecture, and church-plate; for each particular of which drawings and exact measurements of proportions are given. Juan de Arphe also published a 'Quilatador de Plata,' 4to. Valladolid, 1572, and Madrid, 1578. He was the Bezaleel (Exod. xxxvii. 22), the Cellini of Spaniards; and his family in the West rivalled that of the Becerriles of Cuenca."

Foreign invasion, the fluctuations of fashion, and the sequestration of church property, have led to such an extensive destruction of old Spanish plate, that scarcely any vestiges remain of the works of such artists as those above referred to. Some, however, are to be found at Toledo, Seville, Santiago, Oviedo, and Valladolid. In the latter place the art is not yet quite extinct; for the old bridge of the Plateria (like the Ponte Vecchio at Florence) is still inhabited by the descendants of those by whom the early glories of the art were achieved. In reference to the decadence of the craft, we may remark that it was the boast of writers of the age of Charles V., that there were more workers of plate in Spain than in any other two countries in Europe.

To convey an idea of such remnants of old church-plate as have escaped destruction to the present time, we cannot do better than quote the description given by Mr. Ford of the splendid vessels which still adorn the shrine of the patron saint of the country in the cathedral at Santiago.*

"Behind the statue of the apostle is a small room, which contains what church-plate escaped the French pillagers. Observe two very ancient gilt pixes: a Saviour seated under a Gothic niche, with two angels; and some ewers and basons in the shape of scallops.

"Next visit the *relicario*, in which are many exquisitely-wrought shrines and goldsmiths' work, containing relics, which are detailed in printed catalogues in Latin, Spanish, and French, given here gratis. The relics are pointed out by a priest with a long stick. Formerly there were linguists (*lenguageros*), who explained what he said in all the tongues of the earth. Mellado, in his 'Guide,' 1846, calls attention to some milk of the Virgin, quite fresh and white; a thorn of the Crown, which turns red every Good Friday; sundry parcels of the 11,000 virgins, and a mighty molar of San Cristobal. We ourselves were much struck with a smaller tooth of Santiago himself, the gift of Gaufridus Coquatriz. This *relicario* is called *La Capilla de los Reyes*, in which the royal tablets have been barbarously modernised. Some of the sepulchral statues are of remote antiquity, *e.g.* Don Ramon, era 1126; Fernandus II., era 1226; Berenguela, era 1187; Alonso IX. of Leon, 1268; and Juana de Castro, 1412. The enamelled tombs of San Cucufato and Fructuoso are curious: so are the chased *relicarios*. The rich chased crucifix, which contains a portion of the real cross, is one of the oldest authentic pieces of Christian plate existing. It is a gilt filagree work studded with uncut jewels, and is inscribed, 'Hoc opus perfectum est in era ixoo et duodecima. Hoc signo vincitur inimicus, hoc signo tuetur pius; hoc offerunt famuli Dei Adefonzus princeps et conjux.' It was, therefore, made about 874; the figure of the Christ on it is more modern. Here are two chandeliers of gilt arabesque, studded with jewels, and bassi-relievi of the Rey Chico, and said to have been taken in 1492 in the Alhambra, but they are of the date 1673. The Tesoro up stairs has a fine *artesonado* roof. Here is the *urna*, the silver sarcophagus,

* A pilgrimage to the shrine of this saint was not only regarded in the middle ages as a religious duty, but was in many cases made a condition of the tenure of lands, and the succession to inheritances.

with the star above, in which the host is deposited on Good Friday, when it is placed in a beautiful viril, made, in 1702, by Figueroa of Salamanca."

The noblest specimen, however, of the silver plate of Spain is the superb *custodia* still preserved in the Cathedral of Valladolid. This masterpiece of Juan de Arphe (1590), which escaped by a miracle from the French melting-pot, is six feet high, and is indeed a fine specimen of the works once executed in this city of silversmiths. The chief subject represented in it is Adam and Eve in Paradise. A few chalices, and a golden viril, studded with jewels, are the scanty remains of many other chests of which the Cathedral once boasted.

The Cathedral of Leon formerly possessed many exquisite objects, including the tomb of San Alvito. The precious frontal was unfortunately carried away, but the *urna*, an admirable specimen of art, remains, and the host is deposited on Good Friday in its central division. We are told by Mr. Ford that there are other beautiful specimens at Leon, especially a viril, in silver and gold, and another, square and gilt; but he adds, that "the cross and custodia are gone, alas! for they were masterpieces of Enrique de Arphe, the great goldsmith of Spain, in 1506. The latter was one of the finest pieces of plate in the world. Morales ('Viaje,' page 55) describes it, and the curious mechanism, invented by a Fleming, by which it was moved in processions through the streets."

In jewellery the Spaniards were no less skilled than in the production of silver-plate, and a reference to the portraits of its ancient grandees will suffice to show the gorgeous nature of such personal decorations in the olden time. A large collection of these precious ornaments, including upwards of one hundred cups and tazzas, has recently been formed in the Museum at Madrid, through the laudable exertions of Vicente Carderere. Among these Mr. Ford specially notes "a mermaid, with an emerald tail, rising out of gold studded with rubies," attributed to Cellini, and an exceedingly beautiful cup, supported by a female figure.

In Spanish iron-work no less skill was displayed than in works in the precious metals, and many enclosures and railings to the choirs and chapels of cathedrals and other churches still attest the ability of the *rejeros*, or makers of purcloses. Among the principal of these artists may be mentioned Francisco de Salamanca, 1533; Cristobal Andino, 1540; Francisco de Vallapando, 1561; and Juan Bautista Celma, 1600.

In bronze much admirable work was executed, in the Cinque-cento style, by the last-mentioned artist, especially the exquisite pulpits on each side of the high altar in the Cathedral at Santiago. About the same period, Bartolomé Morel executed the great bronze candelabrum (*el Tenebraijo*) at Seville, and the large figure of Faith which constitutes the *girandillo*, or vane, on the summit of the celebrated tower of the Giralda, in the same city.

For these scanty notices of Spanish metal-work we must acknowledge our extensive obligations to Mr. Ford, but for whose enlightened observation of such antiquities very little could have been generally known on the subject. We cannot better conclude our remarks than by adverting to the singular fact, in reference to the manipulation of bronze, that what may have been a loss for Spain proved, in one particular instance, greatly to the profit of England. But for the disappointment which was experienced by the unfortunate Torregiano on his visiting Spain, in the hope of obtaining employment upon the monument of Ferdinand and Isabella,* it is doubtful whether he would have been enabled to undertake those beautiful works which he carried out in this country. Upon his completion of the monument to Henry VII. he returned to Spain, where, we are told by Mr. Ford, he modelled a beautiful "Virgin," of which the exquisite *la mano a la teta*, in the Seville plaster-shops, is a copy. He ended his days in the miseries of the Inquisition.

* His trial-piece still exists, in the shape of a figure of Charity, carved in white marble, and placed over the door of the Sala Capitular, in the Cathedral at Granada.

DESCRIPTION OF THE PLATES.

PLATE I.

The Frontispiece.—In this Plate an attempt has been made to represent a precious book-cover, in which are combined many of those decorative processes which have been at various periods employed to heighten the effect of artistic metal-work. The central portion and the tablets above and beneath, it has been proposed to execute in silver repoussé chased up and parcel gilt. The filling up of the interstices between these and the outer border is shown as consisting of plates engraved by the "burin," and filled in with niello. The inscription at the top and bottom might be carried out in champlevé, similar to the old Limoges work, and the scrolls at the sides in cloisonné enamel, similar to the ancient Byzantine. The little heads might be brought out *en ronde bosse*, after the manner practised by Caradosso, and the borders surrounding them, and the larger carbuncles enlivened with damascening, tausia, or *lavoro all' agemina*. The ornaments adjoining the smaller gems should be in gold filagree, securely soldered into little scroll patterns. The green leaves on the margin, as well as the pearls which form the leading lines of white throughout the design, might be in jewellers' or Cellini enamel; while the coats-of-arms on the clasps of the book should be engraved in low relief, having translucent enamels floated over them after the ordinary mediæval fashion of Italy. The framework of the whole might be cast in fine latten and gilt, the numerous pieces being as far as possible soldered together, and pinned and riveted at the back, so as to form a strong and entire ground-work for the ornaments: the whole being firmly attached to an oaken back, by means of screws, the heads of which should be covered by the gems, which should project so far as to prevent the rich work from suffering by friction on a desk or table.

PLATE II.

A screen in wrought-iron from the Church of Santa Croce at Florence. This beautiful grille, which serves as the enclosure on one side to the Rinuccini Chapel, in the Westminster Abbey of Tuscany, is the most elaborate and perfect specimen of smiths' work existing in Italy. We gather from the inscription upon it that it was erected in honour of the nativity of the Blessed Virgin by the Rinuccini family, in the year 1371. The various sections and details given on the Plate exhibit the mode in which it was manufactured, and the ingenuity with which it is held securely together without obtruding the various connexions of the parts. In its design it corresponds completely in point of style with the works of Orcagna, and in its elaborate tracery it recalls the windows of Or San Michele, from which it has evidently been imitated. From the similarity of the style of workmanship of this railing with that of the celebrated enclosure to the chapel of the Cingola in the cathedral of Prato, the two might readily be supposed to have been worked by the same hand. Simone, brother of Donatello the sculptor, appears, however, to have been far too young to have had anything to do with the former, although he, undoubtedly, executed the latter. Attention may be especially directed to the ingenious way in which small ribbons of metal have been bound around the pillars, so as to convert them into twisted shafts.

PLATE III.

Is a fine altar candlestick in bronze, which was purchased many years ago by Lewis Wyatt, Esq., at Brescia. In its style it resembles those magnificent specimens by Andrea Riccio, now preserved in the churches of San Antonio at Padua, and the Salute at Venice. So closely does the style of chasing of this small object correspond with that of the two last-mentioned celebrated candelabra, that if we may not be justified in ascribing it to Riccio himself, there can be no doubt that it was executed by some master of that school of bronze-workers, of which he was the greatest ornament, and which attained its highest state of developement through the influence of that sculptor, who was adored by both Tuscans and Venetians, Jacopo Tatti, detto di Sansovino.

PLATE IV.

Fig. 1 may be taken as a fair specimen of the ordinary Italian chalice of the latter portion of the fourteenth, and the early part of the fifteenth century. It is of Siennese workmanship, and is decorated with both translucent and champlevé enamels. It was purchased at Rome by Mr. Dennistoun of Dennistoun, whose profound knowledge of Italian art is testified by his admirable biographies of the Dukes of Urbino. We cannot but be struck in all chalices of a style at all resembling the one under consideration with the extreme simplicity of the cup, as contrasted with the elaborate embellishment of the foot and knop. This apparent incompleteness in point of design may be accounted for by the fact of the great anxiety of the Roman Catholic Church,

that by no possibility any desecration of the consecrated elements should take place. Hence, the interior of the cup is made perfectly smooth, so that it may be drained to the last drop by the officiating priest, as well as in order that it may be perfectly cleansed by washing.

In fig. 2 we find that the same cause, a dread lest, by overturning, any quantity of the precious wine should be spilt, has given rise to an apparent incongruity between the size of the cup and that of the foot of the chalice engraved, which in other respects is one of the most beautiful in Italy. It is preserved in the Church of San Domenico at Perugia, in the same sacristy with that very remarkable specimen of a somewhat later date, which is related to have been presented to the great Dominican monastery by Benedict XI., and which has been so admirably engraved in Mr. C. J. Richardson's work on decorative art.

Fig. 3 is a ciborium, or vessel for the reservation of the host, which exhibits unmistakeable characteristics of Venetian design, and of that school of Gothic which, founded in the thirteenth century by the Pisani, was carried to its highest perfection at Venice by Filippo Calendario in the fourteenth, and by Maestro Bartolomeo, the architect of the Porta della Charta, in the fifteenth century, to which the production of the objects in question may be ascribed.

Fig. 4 has been introduced into this Plate to illustrate the remarkable change of form and detail which the interval of a century only produced in the form of the ciborium in Italy, at that period when the spirit of cinque-cento art gained a complete ascendancy over the later Gothic styles. However much the types of the ornaments may have been transformed, it may be observed that the enamels in figs. 3 and 4 have been executed by the same process.

PLATE V.

Fig. 1 shows the elevation of a wrought-iron grille existing in a chapel of the Palazzo Publico, or "Della Signoria," at Sienna. It is a very remarkable specimen of the workmanship of the latter part of the fourteenth century, and is entirely made up out of thin plates of iron in the manner shown by the section (fig. 2). The ornamental frieze is cut out of sheet-iron, which is cold-hammered at the back somewhat after the manner of repoussé work, so as to give a slightly rounded appearance to the low relief of the ornaments. The finials surmounting the frieze are entirely formed out of strips of sheet-iron, bent and twisted with much skill into the forms of the desired leaves and flowers. The chapel enclosed by this grille is celebrated for its frescoes by Taddeo Bartolo, the greatest master of the early Siennese school.

Fig. 3 is another fragment, executed in a precisely similar manner to that which has been adopted for the preceding, which it so closely resembles in style that it appears probable it may have been executed by the same artist. It is preserved in the Church of the Santa Trinita at Florence.

Figs. 4 and 5 are taken from the railings which enclose the well-known monuments of the Scaligeri, at Verona. They are interesting both from their workmanship and design, from their introducing the "scala," or ladder, which was not only the armorial cognisance of those powerful nobles, but the objects from which their very name was derived. They are entirely cut out of sheet-iron, each quatrefoil being riveted to that which adjoins it. The effect produced by grilles of this description is that of a remarkably pleasing diaper, and is one which might be reproduced in the present day by means of our improved stamping apparatus, with great facility, and at small cost.

Figs. 6, 7, 8, and 9 are executed in a different manner, being entirely wrought on the anvil out of bar-iron in numerous pieces, which are subsequently riveted up together. Grilles of this kind are obviously much stronger than those already described, but they are likewise very much more costly. Such patterns abound throughout Venice, and occur, though less frequently, in other Italian cities.

PLATE VI.

The different objects included in this sheet exhibit varieties of the application of one of the most common, and at the same time ingenious expedients, resorted to by the ancient smiths to procure the effect of rich decoration at the smallest possible outlay of time or labour. An open-work pattern having been marked on sheet-iron, was punched out, and the edges filed up square. This sheet, which we will call No. 1, having been laid upon another sheet, No. 2, foliations or other ornaments were marked out through the interstices of No. 1. When the second set of ornaments had been cut out, No. 2 was placed on another sheet, No. 3, and the same operation repeated to any extent of elaboration. Any number of sheets so perforated, being laid one upon another in such a way as to best throw up the design, were riveted together, and occasionally beads, rosettes, knobs, or other ornaments, were also attached to the face. As one punching, and one filing up, would serve for many plates at the same time, this, although strictly a hand-work process, was by no means so expensive as might be imagined. As the localities whence all the objects figured in this Plate have been taken are carefully indicated on them, it may be scarcely necessary to repeat a dry catalogue in this place; we shall content ourselves with calling attention to the beauty of the Nuremburg ironwork, and the fact that if the smiths of Augsburg carried off the palm for metal-work employed by the military, those of the former city unquestionably excelled in the manufacture of every variety of article required for the use of the Church or the laity in times of peace.

PLATE VII.

This Plate furnishes us with examples of the elaborate knockers which the wealthy nobles and citizens of Venice and Bologna affixed to the doors of their palaces in the richest days of those states. Proud of the art by which they surrounded themselves, rather than of the riches by which accident and the exertions of previous generations had to a great extent surrounded them, the aristocracy of Italy were dissatisfied until even the most utilitarian of their wants and requirements were ministered to by an artist. Hence we can be but little surprised to trace, even in their door-knockers, the influence of Luca della Robbia and Sansovino, of Riccio and Giovanni di Bologna. The most cursory inspection of works similar to those we engrave will suffice to

show that they were not manufactured by the dozen, and supplied to the market as they issued from the mould. On the contrary, it is rare to meet with a repetition of the same design, and in every instance the chasing of the bronze or brasswork is carried to the highest degree of perfection. The "Pisani" knocker is justly regarded as the handsomest in Venice, and dates probably from early in the sixteenth century; the others are all somewhat later, though scarcely less excellent.

PLATE VIII.

The various objects engraved in this Plate are all employed in the service of the Roman Catholic Church, and exhibit by no means uncommon types of form. The cross is adapted for standing on the "predella," or raised step of the altar, and is rendered especially worthy of veneration by the insertion of relics, which may be seen through the little glass casements enclosing them. The tall, thin vessel on the right is a "monstrance," or reliquary, made transparent for the purpose of exhibiting relics. Many such are exhibited on the occasion of the great solemnities of the Church, and those containing remains of the various saints of the Romish Calendar are especially brought forward on the feasts or octaves of the respective saints. The remaining object is a "thurible," or apparatus for burning incense, and so wafting it about as to diffuse the fragrant smoke. The upper half of the sphere slides upon the chains, and may be raised so as to admit of the insertion of the incense; when lit, the upper half is lowered down, and the acolyte, or serving-boy, holding the ring at the end of the chain, swings the vessel to and fro, so as to quicken the draught and drive the smoke out of the holes made in the upper part of the thurible. The whole of these objects are good specimens of Flemish design of about the year 1400, and are preserved at the little village of Graefürt, near Dusseldorf, where they were sketched by Mr. Charles Barry, jun., and by his brother, Mr. Edward Barry.

PLATE IX.

The hinge from the church of All Saints, Leighton Buzzard, from a drawing by Mr. John Gibson, is not only interesting as an elegant specimen of the workmanship of the end of the thirteenth century, but it is remarkable as corresponding closely, both in date and style of execution, with the exquisite grille surrounding the tomb of Queen Eleanor in Westminster Abbey, which we are told by existing records was wrought by Thomas de Leghton. Very probably the same workman was engaged upon both one and the other. The difficulty of forging straight bars into such perfect curves can scarcely be appreciated by those who have never attempted to "bend the stubborn iron," and then to weld them together without distortion, involves not only exceeding dexterity of hand, but singular truth of eye as well.

The hinge from the Eschenheimer Thor, at Frankfort-on-Maine, from a sketch by Mr. F. C. Penrose, contrasts singularly with its English companion. It serves to show how readily the smiths introduced into their work the leading characteristics of contemporary styles of architecture, since we may trace in it a tendency to that system of interpenetration which pre-eminently distinguished the German stone and wood-work of the fifteenth and sixteenth centuries. It will be at once perceived that in the German example the curves run through one another freely, while in the English each one is complete in itself, and independent of any other line than that to which it is tangential.

PLATE X.

Various locks and keys, from sketches by Mr. William Burgess. Fig. 1, a key from Blickling Church, Norfolk, is of rude design, but yet serves to show how impossible it was in the middle ages to leave anything connected with the service of the Church absolutely undecorated. Fig. 2 is a French lock from one of those curious half-cupboards, half-dressers, which may be so frequently met with in the sacristies of foreign churches. It is formed out of perforated iron plates, the bottom one alone being of brass, and serving as a ground to relieve the others. Figs. 3 and 5 are keys from the same locality, and of the same description as fig. 1. Figs. 4, 6, 7, 8, are all keys preserved in that most interesting museum of ancient art, the Hôtel de Cluny at Paris. They are all of fine workmanship, and have for the most part been filed out of the solid. The difficulty of working fig. 7 by this process must have been enormous. The French *serruriers* were exceedingly skilful, and, as may be gathered from the writings of Mathurin Jousse, paid more attention both to the mechanism and beauty of their locks and keys than the artificers of any other country. Fig. 9 is a lock in the possession of Mr. W. G. Rogers, and is peculiar in combining "repoussage" with the ordinary manufacture by perforated plates, the swelling of the leaves having been rendered by beating up from the back, and the fibres by engraved lines. Fig. 10 is a singular old key introducing the arms of the possessor.

PLATE XI.

This Plate exhibits a set of figures, sketched by Mr. Rowan, from the celebrated bronze gates of Ghiberti at the Baptistery at Florence. Under the head of Italian history we gave some details concerning these gates, which are the masterpieces of existing bronze-work. It may suffice to indicate the subjects of the figures, and to call attention to the exquisite composition of the leading lines, and the sentiment of grace conveyed in every gesture. Fig. 1 is a noble of the court of King Solomon standing by, lost in admiration at the splendour of the meeting between that monarch and the Queen of Sheba. Fig. 2 is Rebecca plotting to deceive Isaac into blessing Jacob instead of Esau. Fig. 3 is a group of three Jewish women, who stand, in faith, and with a reverent awe at the accomplishment of the miracle of the falling of the walls of Jericho. Fig. 4 presents us with the meeting of King Solomon and the Queen of Sheba.

PLATE XII.

This is an Italian chalice, executed, with the exception of the cup (which in all chalices must be of some precious metal), in latten and gilt. The enamels are translucid and champlevé. It may be observed of the Italian enamels of the period of the vessel engraved (the fifteenth century), that they are invariably applied as gems, and fixed into settings. The reason of this is, that the heat required to fuse the vitrified pastes would have been so great as to have distorted the forms entirely. Subsequently, when gold began to be used as the groundwork for enamel, the principal parts of the objects were placed in the muffle with the enamels upon them. These several portions were subsequently united by hard solder and pinning. In this way Mr. Farrer's jewel and Lady Beresford's vase, exhibited in the Mediæval Collection at the Society of Arts, were executed.

PLATE XIII.

Furnishes a set of examples of hinges suitable for fitting up church-doors. Fig. 1 is from Hunstanton Church, Lincolnshire. Fig. 2 is in the possession of Mr. Pratt, of Bond Street, through whose hands has passed some of the finest iron-work ever seen in this country, and of which a series of first-rate specimens, including the one engraved, was exhibited at the Society of Arts, and in one or more of the local museums formed by the Archæological Institute. Fig. 3 is from a church at Liege. Fig. 4 is from the Choir of Wells Cathedral. Fig. 5 is from Little Greensted Church, Essex. Fig. 6 is from Rouen Cathedral; and fig. 7 from Lincoln.

PLATE XIV.

Fig. 1. This elegant "burette," which there appears little reason to doubt was presented by Suger to his beloved cathedral of Saint Denis, in the middle of the twelfth century, is one of the most charming specimens of the workmanship of that period which have come down intact to modern times. The legend enamelled upon its base would suffice, even if its form had not already done so, to assure us of the purposes to which this elegant vessel was applied. It unquestionably served as one of a pair of what are called burettes — small vases to hold the wine and water preparatory to their being mixed in the chalices during the celebration of the "holy office" in the Roman Catholic Church. In the present instance the vase is of onyx, but they were more frequently, in the early ages of the Church, directed to be made of crystal, so as to ensure the detection of the slightest impurity.

Fig. 2. This graceful vessel has, without doubt, been made by some of those great artists who flourished under the auspicious reign of François I. It is most probably the work of a Frenchman, and not of an Italian, as the details have more of the style of the Renaissance than of the Cinque-cento. Both this and fig. 1 were probably used for the same purpose. The whole have been drawn from the originals by Mr. W. Burgess.

Fig. 3 is a thurible, or censer, such as we have described in our notice of Plate VIII. It has been introduced to serve as a contrast to fig. 4, another censer, very probably of the middle of the seventeenth century, which is curious as showing that even at so late a date the ecclesiastical vessels in use in France retained some remains of their original shape. It forms the link which connects the glorious productions of the thirteenth, fourteenth, and fifteenth centuries with the miserable caricatures which disgrace the shops around Nôtre Dame de Paris and the Madeleine in the present day. It has first of all been cast and then slightly chased with the graving tool. Fig. 3, on the contrary, is wholly wrought, its various parts being cut out of sheet latten, and filled up and engraved previous to being soldered together.

Fig. 5. This elegant object, concerning the origin of which authorities have differed, some regarding it as a drinking-cup, others as a salt-cellar, is now contained in the Louvre, and presents many points of interest. Several circumstances, such as the form of the enamelled band below the bowl and the little figure covered with enamel, as well as the filagree-work, would point it out as of Italian origin; while the architectural decorations are so intensely Gothic, that France, Germany, or Flanders, might appear to have an equal claim to the honour of having produced it. The probability is, that it has originally been of Italian workmanship, and has been repaired at one or more subsequent periods.

PLATE XV.

Is a singular ornament fastened on the door of the venerable Rathhaus at Lubeck. At its foot is fixed a handle, rudely fashioned, after the similitude of a dog. It exhibits the Emperor seated on his throne in the midst of, and surrounded by, the seven Electors of Germany, representing Mayence (in the person of the archbishop and arch-chancellor of the empire), Trèves, Cologne, the Palatine of the Rhine, Brandenburg, Saxony, and Bohemia. From the distinguished position of Lubeck in ancient times, as an imperial free city, as chief town of the Hanseatic League, and as the most important commercial dépôt of the north, we cannot be surprised to find her rich in relics of those arts which are especially fostered by wealth, and of which metal is one of the most attractive. Lubeck even now preserves beautiful brass fonts, monuments, and grilles, in several of her churches. The curious door-handle which we engrave, from a drawing by Mr. Edward Falkener, has been made by partially beating up the plate to give a low relief to the figures, then by piercing and filing out the perforations, and, lastly, by defining all the forms with the graver.

PLATE XVI.

This very curious processional cross was brought from Italy to England a few years back. It passed from the hands of Mr. Forrest into those of the director of the Museum of Economic Geology, in which it now forms one of the most interesting examples of enamelling preserved in that collection. We have elsewhere stated our belief that this cross, if not actually worked

by the great Orcagna, is at least designed in strict accordance with his peculiar style, as manifested in the sculptures of the tabernacle or ciborium of Or San Michele, at Florence. While, for the beauty of the object, it is unfortunate that the transparent enamel which once covered the little medallions of the saints has been removed, it is not altogether to be regretted, since it enables the student to see precisely the mode of preparation usually practised by the Italians for the application of their translucid enamels. We find that while the amount of relief given to the several parts of the medallions was but shallow, the engraving of all the lines was as sharp and crisp as possible, so as to afford more key, and prevent the vitreous paste from chipping or rubbing off. The principle upon which the brilliancy of such enamels depended was that of the preservation of the polish of the silver, so that the light reflected from its surface, which was preserved from tarnishing by the presence of its vitreous coating, might pass through the transparent and brightly-coloured enamel, much as the light streams through a stained-glass window.

PLATE XVII.

Fig. 1 is a bracket from the Cathedral at Bologna, doubtless a Papal gift, from the introduction of the keys and tiara. Fig. 2 is one of those curious lanterns which decorate the Strozzi Palace at Florence, and of which similar specimens are still attached to the angles of the Riccardi Palace, once the famous residence of the Medici, in the same city. We are informed by Vasari that these "lumiere miravigliosè" were the work of one Nicolo Grosso Caparra, a celebrated artificer of the time, by whom it is not unlikely that many of the beautiful rings and cressets which still decorate the old palaces of Sienna may have been executed. On the centre spike was fixed a little iron barrel, containing tow and pitch, while on each of the other spikes a torch was fastened. In some of the old engravings of the festivities given at night by the Grand Dukes of Tuscany, the representations of the effect of this mode of illumination may be seen. It is said that the privilege of affixing such cressets to a residence was one conferred by the State only on the most distinguished citizens, as a peculiar honour, in acknowledgment of services performed.

Fig. 3 is a bracket-lamp in wrought-iron, from the cathedral at Innspruck; and fig. 4 is a bronze lamp, which is attached to one of the pillars which support the shrine of Saint Sebald, in the church of the same name, at Nuremberg. In it we trace distinctly the manner of Peter Visscher himself, entirely uninfluenced by the style of Veit Stoss, whose dominance over his contemporaries is regarded by Professor Heideloff as so universal. In both figs. 3 and 4 a pricket or spike is shown, on which it was usual to fix the candle. The use of a socket in candlesticks is of comparatively very recent introduction.

PLATE XVIII.

The two figures on the left-hand side of this Plate are by Ghiberti. The upper is taken from the exquisite bronze shrine in which is preserved the head of San Zenobio, enclosed in its beautiful silver casing by Andrea Arditi. This shrine, which is one of the greatest ornaments of Santa Maria del Fiore, at Florence, is especially celebrated for the exquisite angels which float in the air, bearing an inscription, and for the principal compartments which illustrate a miracle of the saint's performance,—the resuscitation of a dead child. The figure engraved is taken from the latter, and represents a young maiden holding up her hands in astonishment at the *opus operatum*. Ghiberti's second figure occurs upon one of the Florentine gates, and illustrates that peculiar sway of line upon which the artist so greatly depended for the expression of grace and refinement. The two figures on the right-hand side of the Plate were copied from some which decorate the font in the Baptistery of San Giovanni, beneath the choir of the cathedral at Sienna. So many of the most celebrated workers in metal, Pollaiuolo, Ghiberti, Giacopo della Quercia, Donatello, and Vecchietta, have contributed to the embellishment of this interesting chapel, that it becomes most difficult to ascribe the figures in question to their rightful progenitors. We should incline, however, to a belief that they are by Della Quercia, better known in Italy as Giacopo della Fontana, who, it may be remembered, was, with Ghiberti, one of the seven competitors for the execution of the first gate of the Baptistery at Florence.

PLATE XIX.

Fig. 1, a lock from the iron railing surrounding the choir at Munich Cathedral, is worthy of attention, as showing how agreeably the artists of the Middle Ages were in the habit of treating, and not disguising, the most utilitarian adjuncts to architectural effect. The lock engraved affords an agreeable model for imitation in cases where a lock has to be introduced in connexion with an iron railing or gate, as it is so consistently treated that there can be no possible question as to its purpose or uses.

Figs. 2, 3, 6, and 7 are all keys of very elegant design. For sketches of two of them the author is indebted to the kindness of Professor Donaldson, and for one to Mr. George Vulliamy, Secretary to the Archæological Institute.

Fig. 4. This lock-plate is the only one remaining out of three, which once served both to secure and ornament the gates leading into the central aisle of Henry VII.'s Chapel. These doors are formed of plain wood rails and stiles, crossing one another. These are covered with brass plates, secured by nails with ornamented heads. The square spaces formed by the rails and stiles are filled with open panels of cast brass; the whole has been originally gilt. The tracing of this lock has probably been first of all cast and then filed up.

Fig. 5 is a pretty little escutcheon taken from the Schloss at Nuremberg; and fig. 6 is a lock-plate of modern workmanship, in imitation of the ancients. It is carefully wrought from a design by Professor Heideloff, and now decorates the entrance, or western door, of the Au, or Pfarr Kirche, at Munich.

PLATE XX.

Is one of the most valuable specimens of Siennese metal-work now existing. It is known as the pastoral staff of San Cerboni, and is preserved in the treasury of the cathedral at Sienna. Its design exhibits all the peculiarities of Italian Gothic, and leads us to assume its date to be the latter end of the fourteenth century. The engraving has been made from a careful drawing by Mr. F. C. Penrose.

PLATE XXI.

Represents, firstly, an Italian chalice from Calabria, of the end of the fourteenth century, taken from a drawing communicated by Mr. Roberts Gowan. Secondly, of a ciborium of late date, but a good specimen of parcel-gilding, sketched at Venice by Mr. John Johnson. And, thirdly and fourthly, of two monstrances, such as figure frequently in the paintings of Albert Dürer, Van Eyck, Hemling, Martin Schöngauer, and other masters of the early German school. The execution of the little model monstrances, contained beneath the crystal of the large ones, is no less elaborate than that of the latter: indeed it may be remarked that, excepting the figures, which are occasionally out of proportion and grotesque, nothing can be more perfect than the early German metal-work generally, and more particularly those objects which reproduce the florid architecture of the age of interpenetration. These monstrances were drawn at Graefurt, near Dusseldorf, by Mr. Charles Barry, jun., and by Mr. Edward Barry.

PLATE XXII.

Four pendent lamps. There are few more picturesque adjuncts to the effect of the interiors of the foreign churches than the lamps which the faith or hope of the pious keep continually burning before the altars or the images of their patron saints. On them frequently rich decoration has been lavished; and they may be met with in every material, from the humblest tin to imperial gold. Figs. 1 and 2 have been taken from the Church of San Domenico at Bologna; fig. 3, from the Chigi Chapel in the Church of Santa Maria del Popolo at Rome, has been ascribed, and apparently with propriety, to no less a master than Pollaiuolo himself. Fig. 4, from the Cathedral of St. Mark, is the most graceful specimen of pendent lamps which has fallen under the author's observation, and presents a type of form by no means uncommon in Venice. Although its outline would appear at first sight of considerable antiquity, the object itself was certainly not executed previous to the year 1500.

PLATE XXIII.

We have in this Plate a set of Hinges of German and Flemish design, of which the one in the centre of the Plate, with an elbow contrived to retain a firm hold upon the door without interfering with the panelling, and yet to be attached to the frame at a convenient point, is the most remarkable, if not the most beautiful.

PLATE XXIV.

From a very careful drawing by Mr. Edward Willson, furnishes us with an example of the fantastic, and yet generally graceful, forms into which the artists of the Middle Ages contrived to twist the reliquaries which abounded in every church. This elegant specimen of design and workmanship is preserved in the celebrated Treasury of St. Mark's.

PLATE XXV.

In this Plate we have endeavoured to bring together such a series of objects, decorated with French enamel, as should serve to illustrate, in some degree, the succession of the varieties of process most commonly in use at various periods in that country, from the early to the late Limoges work. The whole of the articles were exhibited at the Salisbury meeting of the Archæological Institute in 1849 by Mr. Octavius Morgan, Mr. Robert Curzon, and Mr. Tucker.

Fig. 1 is a small châsse, similar to those which were applied to the same uses as the more elaborate reliquaries of later times, and which were known as "Bahuts de Limoges," and "Coffres, or coffréts, de Limoges." They consist of sheets of latten, an alloy of copper, about one-eighth of an inch thick, nailed on to a wooden box, the box being generally made to open by contriving one of the sides so as to be able to fall down. We have treated so fully of this manufacture in our history of French metal-work, that it will be unnecessary to dwell farther upon the subject at present.

Fig. 2 is an episcopal ring, ornamented with the Limoges enamel, which probably belonged to a cardinal, or some other dignitary of the diocese of Lyons.

Fig. 3 is a small pix: these and the bahuts are now the objects which are most commonly to be met with of all the productions of Limoges. They are frequently found with a cross at the top: this is generally, if not always, plain. The conical head lifts up, being hinged on one side. These curious little boxes served to contain the "blessed Sacrament."

Fig. 4 is a pax, with translucid enamels upon relief, which is curious as being probably a French imitation of the Italian process. It dates from a time but little previous to the year 1500. The use of the pax, which was universal in the Roman Catholic Church, was to represent that kiss of the faithful which in the early ages was interchanged between true believers on the receipt of the priestly benediction. Scandals caused the primitive practice to be abandoned, and as a substitute the "pax" was introduced, which being held by the priest was presented in turn to the lips of each of his congregation. In the Middle Ages they were always richly decorated, either with engraving, enamel, or niello.

Fig. 5 is a tazza, of late Limoges enamel, where the white figures have been partially glazed over with transparent tints of grey. This beautiful object—which it appears probable, from its style, was the work either of Jean Courtois or Pierre Rexmon, enamellers of the French court—may be regarded as a specimen of the ordinary type of such vessels, which were manufactured in profusion for the decoration of those corner cupboards and "standing desks" of plate so frequently referred to in descriptions of courtly festivities. We have elsewhere alluded to the processes of this painting *en grisaille*, and to the artists by whom it was best executed.

Fig. 6 is a girdle, ornamented with silver. These girdles formed no inconsiderable part of the jewellery of wealthy persons in the Middle Ages; and there is scarcely an effigy, or picture of a noble, from the beginning of the fourteenth century to the beginning of the sixteenth, which does not supply us with some varied form of this indispensable item of personal adornment.

PLATE XXVI.

Figs. 1, 2, and 3, are taken from the ornamental portions of the bronze gates of the Baptistery of Florence, by Ghiberti; and in their minute, yet free execution, merit all the praises which have been heaped upon them from the date of their completion to the present time.

Fig. 4 represents a fragment of a magnificent candelabrum, which now stands in one of the transepts of the cathedral of Milan. This splendid object, which is popularly known as the Albero, rises to a considerable height, with seven branches, covered over with beautiful ornaments of every description. It was presented in the year 1562 by Giovan' Batista Trevulzio, archpriest of the cathedral; and although its general form would afford some basis for a supposition that it had been worked at a period long anterior to its presentation, there can be but little doubt that it was the production of some contemporary artist.

PLATE XXVII.

Affords us, in the form of a series of beautiful lamps, some further indications of the riches of Lubeck in artistic metal-work. The whole of these objects were sketched in the cathedral of that town by Mr. Edward Falkener.

PLATE XXVIII.

Represents one of the largest and most important reliquaries preserved in Italy. It belongs to the altar of San Giacomo, in the Duomo at Pistoia, and is produced only upon the occasion of the most important festas. It will be remarked, that this precious relic of ancient design has suffered considerably,—a large portion, in the form of a vase of the seventeenth century, having been superadded to the original fourteenth-century work.

PLATE XXIX.

The iron-work for this door was evidently produced by the same workman who executed the screen round Edward IV.'s tomb. The most curious feature in this set of door furniture is the remarkably beautiful specimen it exhibits of the little aperture with a box and a slide to it, by the withdrawal of which an inspection of the visitor might be made, and a conversation take place, prior to drawing back the bolt. Some modification of such an apparatus was invariably applied to every doorway of the period. There are several such contrivances in the cloisters of Westminster Abbey, and many yet exist in the remains of the monastic and conventual establishments. Mr. Pugin has introduced it in his doorway to Magdalen College, Oxford. The plate in that case is cut into a pattern of lilies. Several may also be met with in the new Houses of Parliament. This Plate is taken from a Drawing by Mr. Edward Falkener.

PLATE XXX.

Represents a very graceful chalice, with its accompanying paten, of the ordinary Italian type of the fifteenth century, drawn at Randazzo, in Sicily, by Mr. Edward Falkener. In all such chalices we cannot but be struck by the simplicity of, and uniform adherence to, a constantly recurring combination of parts. In every one the plain cup, the jewelled or enamelled knop, the straight pipe, as it is called, and the spreading foot, are to be found,—with varieties of decoration certainly, but never of general form or purpose.

PLATE XXXI.

The two upper subjects in this Plate have been selected for their simplicity, and the economy with which similar articles might be reproduced in the present day. One is taken from the church of St. Jacques at Liege, and the other from that of St. Lawrence at Nuremberg. The two lower objects are door-handles of wrought-iron: one from the church of St. Vincent at Rouen, and the other from St. Mary at Bury St. Edmund's.

PLATE XXXII.

A group of chalices and patens, from sketches made by Mr. Edward Falkener at Randazzo, in Sicily. The chalice on the right-hand side of this Plate is the earliest specimen of such an object, exhibiting the peculiarities of Italian processes, which has fallen under the author's observation. It dates, probably, from about the year 1300. Its antiquity is proclaimed by the peculiar spreading of the cup, the rudeness of the form of the base, and the Early English, or rather Pisan, character of its foliated ornaments. The chalice on the left of the Plate is, probably, nearly one hundred years later, and illustrates the progress made by the Italians in the art of enamelling, since, while the subjects in the older vessels are executed precisely in accordance with the practice of Limoges in the latter part of the thirteenth century, those of the later example are the regular translucid enamels introduced by Giovanni di Pisa, and carried to such perfection by Ugolino of Sienna, in the magnificent "Corporale di Bolsena," in the year 1338. From the introduction of the stork, the heraldic cognisance of Perugia, into this later chalice, it does not appear impossible that it may have been executed in that city, which was almost as famous at a very early period for its school of goldsmiths, as for its painters and sculptors. For the sake of comparison, we have introduced into this Plate

one of those productions of the Cinque-cento period which illustrate the change from the Gothic forms to those in direct imitation of the antique. The first indications of this change are the elongation of the chalice; the increased size and roundness of the knop; a subdivision of the pipe into various bulbs; ornament creeping up the sides, and at last to the lip of the cup; a diminished spread to the foot; and a gradual relinquishment of the use of enamels, parcel-gilding frequently taking its place as an enrichment. In fact, the latest chalices approach as nearly as possible to tall drinking-cups, and lose altogether the simple and severe forms of the original type.

PLATE XXXIII.

Displays various examples of Italian wrought-iron grilles and railings. These subjects, which have been procured (fig. 1) from the church of Santa Maria degli Angeli at Rome (figs. 2 and 3), from private houses at Venice, and (fig. 4) from the tomb of King Roger in the cathedral at Palermo, have been selected with a view to their completing the series commenced in Plates II. and V. The whole of these will be found well worthy the study of those connected with the production of iron enclosures in the present day.

PLATE XXXIV.

Fig. 1 represents the doorway from Merton College at Oxford, which was, probably, executed at the latter end of the reign of Henry III. This beautiful specimen may be regarded as a model Early English hinge. There is just the proper amount of solidity and of decoration; and the latter, while made subservient as it should be, is so perfectly wedded to the former, that this may fairly be pronounced to be one of the most "perfect specimens of the ancient" and honourable craft of the smith which time has spared to us. In fact, there are but few doors to compare with it. Those in the Chapter-house at York, in Lincoln and Chester Cathedrals, in St. George's Chapel, Windsor, and in the School-house at Norwich, being its principal competitors for "honourable mention." The doorway is shown surrounded with sketches of details of ancient iron-work, enlarged so as to convey an idea of the elaboration of the design of such productions, and of the labour involved in their execution.

Among these fig. 2 gives us the head of a hinge from St. Peter's at Oxford, one of the oldest churches in that town. The hinge itself was probably made early in the thirteenth century. The styles nailed over them are apparently of later date. The ornamental manner in which the nails are used in all these specimens is well worthy of attention.

Fig. 3 is from St. Mary's, Oxford.

All of these details are interesting technically, since while some of them exhibit the flattened ends of the bars worked into foliated forms by means of various heading tools; others show elegant little bands and rolls, set on, to conceal any possible imperfection, at the welding joints, and to give apparent strength and connexion at the point of impact of the various curves.

PLATE XXXV.

Is a curious lectern worked in brass, and now in use for the reading of the Gospels, in the cathedral at Messina in Sicily. The upper portion is made to revolve, so that a copy of each evangelist's writing being laid upon his proper emblem, the priest, standing on a step at the side, has only to turn the desk round until he has opposite to him the requisite gospel. Thus each evangelist's record is successively read from an appropriate emblem, the priest in all cases remaining with his face to the congregation. It is impossible in any drawing, however careful, to render the exceeding accuracy and mechanical dexterity with which this object has been executed.

PLATE XXXVI.

A group of hanaps, wiederkoms, tankards, &c., in the possession of Messrs. R. and S. Garrard of London. As the devotion of the wealthy to the Church diminished throughout Europe, so their devotion to themselves increased; and hence we find that the superfluous riches which, from the tenth century to the middle of the fifteenth, were expended on enriching the shrines of celebrated saints, from the later period until the middle of the seventeenth century were employed in the execution of household plate similar to that we now engrave. Beautiful as had been the old drinking-cups of the Florentine and Venetian merchants, they were as nothing compared to those which their yet more wealthy brethren the Germans and Flemings adopted. At Nuremberg, Augsburg, Cologne, Lubeck, Hamburg, Hanover, Frankfort, Antwerp, Ghent, Bruges, Brussels, and Courtray, an incredible amount of capital was sunk in the execution of those objects, which were looked on as their Penates by the wealthy burghers of those towns and cities. To attempt to convey any idea of the pithy legends and quaint decorations which embellish such objects would be an interminable labour. Some representations of the leading types in point of form the author has been enabled to give through the kindness of Mr. Garrard; but, to appreciate the eccentricities of such objects, a visit must be made to some of the out-of-the-way German towns, where, as at Lunenberg, some portions of the old plate of the municipalities and guilds has been preserved. As we noticed in our English History the avidity with which our topers took up the study and accumulation of drinking-vessels, it will not be necessary to dwell further on the subject in this place, excepting to express our regret that the fluctuations of fashion should have in so many cases consigned the quaint and often elegant forms of such objects to the melting-pot, in order that they might rise again from it converted into Frenchified épergnes and gadroon-edged salvers.

PLATE XXXVII.

A lock, plate, and key, formerly belonging to an old house at Wilton. This is a specimen of iron-work of very pleasing design; the ground being well filled, and the voids and solids agreeably balanced. We are indebted to the kindness of Mr. E. A. Spurr, in whose possession this lock now is, for an opportunity of reproducing it in the present work.

PLATE XXXVIII.

Screen from Edward IV.'s tomb at Windsor. This screen, which partly surrounds the tomb of Edward IV. is a most beautiful example of the taste and labour which was bestowed on even the accessories of the tombs of the fifteenth century. That which guards from injury the tomb of Henry VII., at Westminster, is, probably, the finest in existence.

The Windsor grille has generally been attributed to Quentin Matsys; it is certainly of his epoch, and the architecture in some of its details approximates to that of Belgium; we should, however, remember that in England all the iron-work in which tracery is employed partook, more or less, of a flamboyant character.

It is difficult to tell the use of the canopies, as there is no provision for placing statues below them. Along the top of the screen ran a row of sconces for the lights, and at each end the screen is terminated by an octagon turret, ornamented in a similar manner with niches. The whole is of wrought-iron, and executed with surprising sharpness and dexterity.

About two years ago Messrs. Bramah, Prestige, and Co. repaired in malleable iron this grille, which was brought up to London for that purpose. On reviewing the circumstances of the case, as well as the style of execution, it appears by no means improbable that this grille should have been of Flemish workmanship, since we are fully aware of King Edward IV.'s numerous connexions in Flanders,—that his sister married the Duke of Burgundy, and that he employed many Flemish artists himself, especially in the illumination of manuscripts.

PLATE XXXIX.

Specimens of revived cinque-cento jewellery, contributed to the Exhibition of 1851 by Froment Meurice of Paris. The circumstances of the extreme rarity of specimens of mediæval, or Renaissance jewellery, being so great, and the fact that almost every known variety had been already figured, induced the author to decide on selecting from among the beautiful display made by Froment Meurice in the Great Exhibition such examples as he thought most graceful and appropriate for reproduction in the present day.

PLATE XL.

A chalice brought from La Marca, in the possession of the Marquis of Douglas. This vessel agrees so entirely in style with that we have engraved in Plate XII. as to need no additional remarks.

PLATE XLI.

Wrought-iron gates of the Clarendon Printing-office, Oxford. This specimen of the skill of the smith belongs to that school of art-workmanship, which attained its highest developement at Hampton Court, in the middle of the reign of King William III., under the auspices of the artificer, by whom all the most elaborate gates and railings which decorate that Palace were executed. In our historical notice of English metal-work, we have dwelt on the general characteristics of such objects of which the labour and consequent cost must have been very great. The Clarendon Printing-office was completed in the year 1712, and the gates engraved are no doubt of that period.

PLATE XLII.

In this Plate we have contrasted two agreeable specimens of parcel-gilding. One drawn by Mr. Falkener from a chalice in the treasury of the church of Randazzo in Sicily, and the other drawn by Mr. John Johnson, from a very elegant drinking-cup found by him in the possession of a dealer in curiosities and antiquities at Venice. The former of these two objects is very singular in style, and belongs to a transitional period between the Gothic and the pure Cinque-cento which is exhibited in the latter.

PLATE XLIII.

Locks from Nuremberg, probably of the end of the fifteenth century. Figs. 1, 2, and 3, have been sketched from various old buildings in that ancient city. Fig. 4 was taken from a remarkably fine and large lock now in the possession of Mr. P. C. Hardwick, who has much interested himself in the study of mediæval and Renaissance metal-work. Fig. 2 exhibits very clearly an ingenious contrivance frequently employed by the old locksmiths, especially where the door was in a dark situation. It consisted of so arranging the design of the ornament affixed to the lock-plate, as to guide the key at once to the key-hole, and to prevent the waste of time so frequently incurred in poking about vaguely. It may be curious to notice, as illustrating the danger of copying without perfect understanding, that in the modern lock, Plate XIX., fig. 8, Professor Heideloff has furnished us with an elaborate and elegant-looking reproduction of this style of arrangement, but that he has at the same time effectually deprived it of all utility by blocking up the access to the key-hole. In many of these Nuremberg locks a good effect is given to the foliated ornaments by punching them up with a point from the back, so as to raise the little rounded knobs, or nodules, so essential in late German Gothic foliage. The line of fibre in the leaves is incised with the graver.

PLATE XLIV.

Figs. 1 and 2 are reliquaries; fig. 3, a pix; and fig. 4, an ancient crystal vessel, all preserved in the treasury of St. Mark's at Venice. Fig. 4 is peculiarly interesting, as furnishing an early and good specimen of the Venetian imitation of Greek filagree work, and fig. 2 is remarkably elegant in design. Fig. 3 presents us with a new and by no means unusual type of the pix. It retains the early box form with the conical top, which we have noticed as very common in the Limoges work of the thirteenth century, and places it on a stand similar in the arrangements of its parts to a chalice, minus the cup. The knop in all cases serves to enable the officiating priest to grasp the vessel tightly and steadily.

PLATE XLV.

This Plate contains in the centre a portion of one of the bronze arabesques which enrich the pilasters on the sides of the principal doorway of the Church of La Madeleine at Paris. The gates of that doorway, as well as its ornamentation generally, were executed by Henri de Triqueti, a young French artist, whose talents as a sculptor, and worker in bronze, silver, and ivory, are of the very highest order. The compositions illustrating the Ten Commandments, which enrich the panels of the above-mentioned gates, are very grand and severe in style, being finished, as respects the chasing of the details, with a breadth and vigour which recall the works of Pollaiuolo, Donatello, and Verrocchio, rather than those of Ghiberti, Luca della Robbia, or Sansovino. In the bold style of bronze-working nothing cleverer has been produced in modern times. The treatment of the ornament engraved is equal to the antique.

The dagger, the two sides of which are engraved, one on each side of the arabesque, is a charming specimen of cinque-cento design, and is executed in silver repoussé in the highest style of the art.

At the top and bottom of the Plate are figured some of Cellini's most celebrated coins. The obverse, representing the head of Alessandro di Medici (Il Moro) approaches, so far as we have been enabled to judge, more nearly to the excellence of the coins of the Augustan age than any others which have been executed since that period. Vasari thus speaks of the abilities of Benvenuto as an engraver of dies generally, and especially of the one in question. "There was no man in that age," says he, "amongst the numbers who tried their hands at such work more successful in making the medals of Pope Clement VII. than Cellini, as is well known to those who have seen such pieces and keep them in their possession. Hence he was employed to make the stamps for the Roman mint, and there were never seen finer coins than those that were struck in Rome at that period. After the death of Pope Clement, Benvenuto returned to Florence, where he likewise made stamps with the head of Duke Alessandro for the mints of Florence, so wonderfully beautiful that some of them are preserved to this day as ancient medals, and with good reason, for in them he surpassed himself." In his life Cellini has noticed the circumstances connected with the production of his principal medals; and in his "Trattato dell' Oreficeria," he gives full directions for making the requisite dies, and striking the medals and coins.

The whole of these objects were drawn by Mr. Frederick Warren.

PLATE XLVI.

Chalice in silver-gilt from the treasury of the Cathedral of Pistoia. In point of design and execution, we do not hesitate to pronounce this to be the most perfect chalice we have ever seen. It is of the very best period of the Tuscan school of goldsmiths. The author is delighted to be here enabled to record his gratitude for the kindness and attention he received from the ingenious Canonico Braschi, during the time he spent in studying and drawing the beautiful relics of ancient metal-work preserved in the Cathedral at Pistoia.

PLATE XLVII.

Contains on the left a morse or brooch, preserved in the trésor of the Church of St. Ursula, at Cologne. In this object not only is the design particularly pleasing, but there is introduced a variety of workmanship, of which the Germans were particularly fond. It consists in cutting a number of long stripes of sheet metal into irregular shapes, and then soldering or pinning them by one end to the object to be decorated. By means of pliers and nippers the strips of metal were then twisted, interwoven, and fashioned, so as to produce the effect of foliage, round wires being here and there introduced to assist by contrast, and to carry out the notion of the occasional appearance of stalks. Very happy results are frequently produced in ancient metal-work by this hand-work process, the lightness of effect ensured by it being essentially concordant with the proper conditions of metal-work design. Morses were used to fasten the copes or cloaks worn by priests in great processions. Upon their elaboration great sums were lavished during the Middle Ages, and on that most celebrated one, which was executed by command of Clement VII. for the pontifical cope, Benvenuto Cellini lavished his most precious workmanship, and the Pope his most gorgeous diamonds and other jewels.

On the right-hand side of this Plate are given some specimens of Italian enamelling, collected from the precious altar frontal of San Giacomo di Pistoia. A description of this wonderful "fruntellum" will be found under its proper place in the notices of the Italian history of metal-work.

In the centre of the Plate are engraved a portion of the archiepiscopal sword of state, preserved in the trésor of the Cathedral of Cologne, a specimen of singularly beautiful and elaborate workmanship, and a brooch in filagree enamel, which is now preserved among the Hamilton gems in the British Museum. This last is a remarkable object, as it is probably the most perfect fragment of Byzantine enamel in this country. Its design, and the arrangement of the coloured pastes with which it is decorated, combine to render it an object no less worthy of the study of the artist than of the archæologist.

PLATE XLVIII.

Fig. 1 is a good specimen, from the Au Kirche at Munich, of an attempt to revive the old forms and modes of working of the mediæval door-handles. It was executed under the superintendance of Professor Heideloff. Fig. 3 is likewise a door-handle, pierced and engraved, from Innspruck. Fig. 5 is a curious specimen of smith's work from Brussels. Fig. 7 is a Florentine door-handle, and fig. 9 is a similar object from Brescia.

Figs. 2, 4, 6, and 8. These are portions of a magnificent bracket for lifting off the cover of the brass font in the Cathedral of Louvain. The outlines beside them show the form of the pieces of iron out of which they have been twisted. Fig. 8 is the great finial. Fig. 2 is the termination of one of the crestings; and Figs. 4 and 6 are terminations of cusps. This twisted iron is exceedingly rare, very few specimens remaining, especially of pure Gothic work. The terminations of the iron railing round the Fountain of Augustus at Augsburg, though of later date, are particularly deserving of attention. This kind of work has been very successfully revived by Mr. Hardman, under the auspices of Mr. Pugin, and the execution of the finials, &c., which decorated their mediæval stove, contributed to the Great Exhibition, left little to be desired.

PLATE XLIX.

Exhibits a group of church plate, of which the most remarkable specimens are the celebrated enamelled chalice and paten preserved in the treasury at Mayence; both of which are remarkable as works of art and of technical skill, and are justly regarded as being the finest existing specimens of old German handicraft. About this very point, however, some little difficulty arises, since, on several accounts, we should feel rather inclined to suspect that they were of Italian workmanship, and most probably either a pontifical or an imperial gift. In the first place, if German, they would be absolutely unique. In the second, the enamels are translucid, and executed in strict accordance with Italian practice; and, in the third place, they apparently include among their ornaments the stork, time out mind the cognisance of Perugia. Beside the chalice stands a very graceful thurible, and in front of it a chrismatory, or vessel for holding the chrism, available for the administration of extreme unction "in articulo." Behind the chalice is a rich book-cover, preserved in the public library at Sienna. The angles are decorated with nielli. Behind the paten is shown a portion (from a sketch by Mr. Edward Falkener) of a curious processional cross, still preserved at Randazzo, in Sicily.

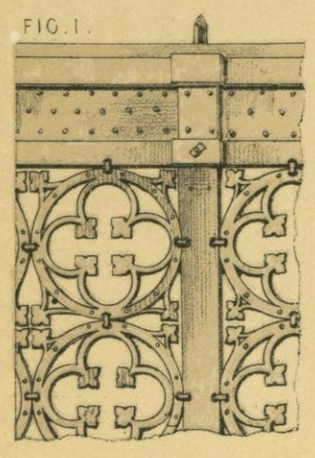
PLATE L.

Fig. 1 is a very curious iron doorway to the sacristy in the Cathedral at Rouen. The engraving has been made from a careful drawing by Mr. Charles Barry, jun. It is essentially French in style; and every detail, including the door-handle and other furniture, is carried into execution at an extraordinary outlay of patient industry.

Fig. 2 presents us with the door of Bishop West's Chapel at Ely. There is scarcely a single chapel in the whole of England which offers more attractions than the one under consideration. The delicacy of the stone-carving is almost marvellous; while the iron-work, though not so minute as we generally find it, is still admirable. The iron-work, as well as the stone-work, exhibits traces of German design. In examining the ornamental portions of the metal-work, we shall find that those parts which imitate foliage, are most deserving of attention. The roses are formed of several pieces of thin iron cut out, and then turned up at the edges; while the nail, which passes through and holds them together, has its head worked into the form of the petals of the flower. It is to be regretted that the branch-work at the top of the gate is now out of shape, having been, no doubt, accidentally distorted.

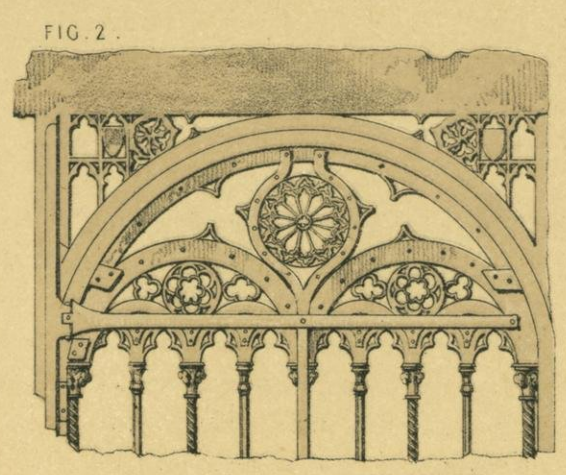
LONDON:
PRINTED BY GEORGE BARCLAY, CASTLE STREET, LEICESTER SQUARE.

FIG. 1.



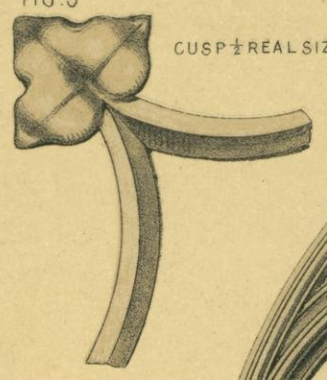
QUATRE FOILS &c. FROM BEHIND.

FIG. 2.



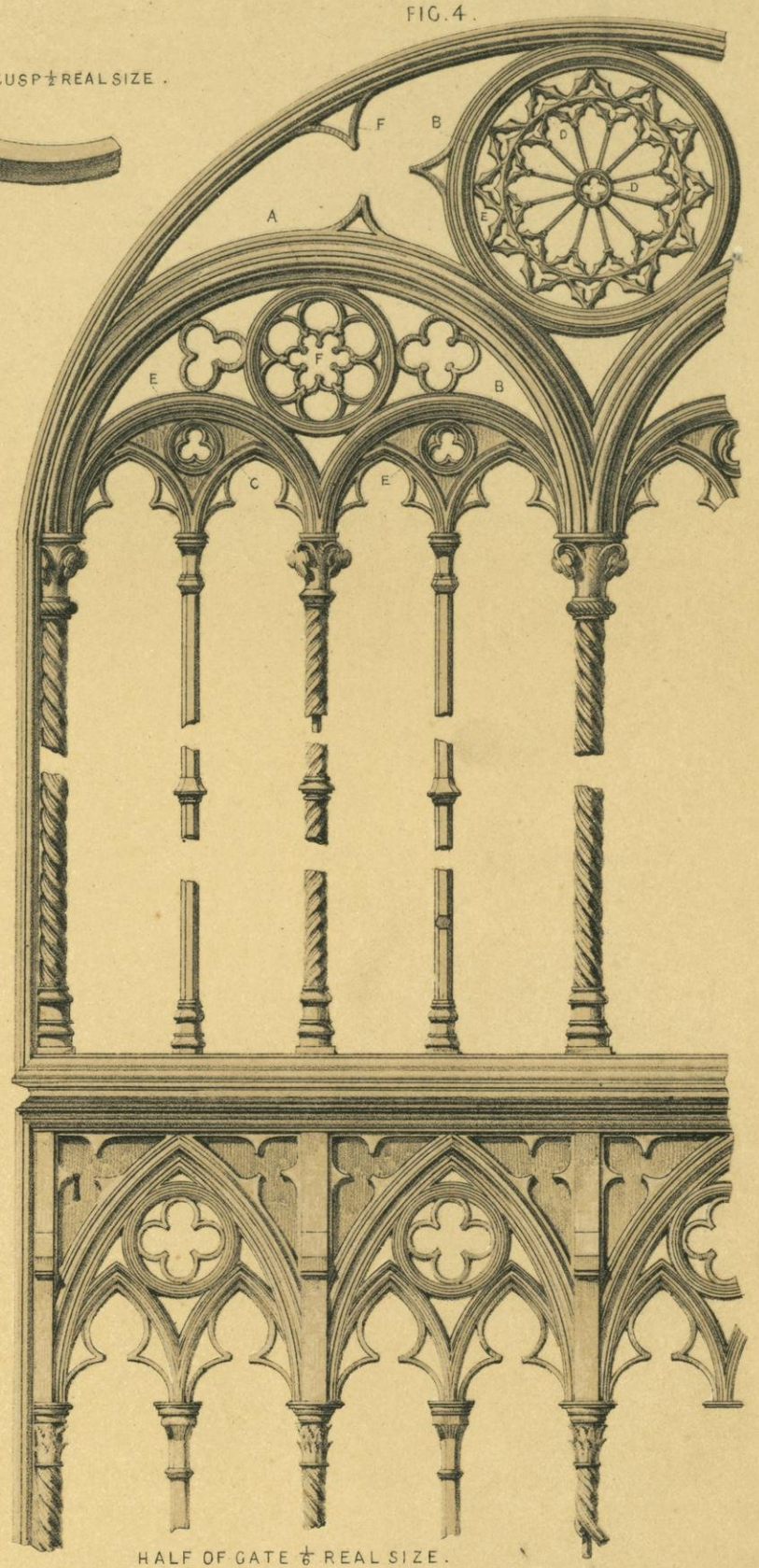
UPPER PART OF GATE FROM BEHIND.

FIG. 3



CUSP ½ REAL SIZE.

FIG. 4.

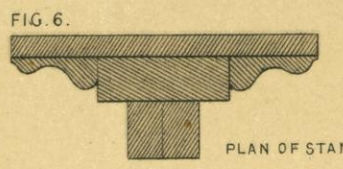


HALF OF GATE ⅛ REAL SIZE.

FIG. 5.

SECTION OF CIRCLE
QUATRE FOIL AND CUSP.

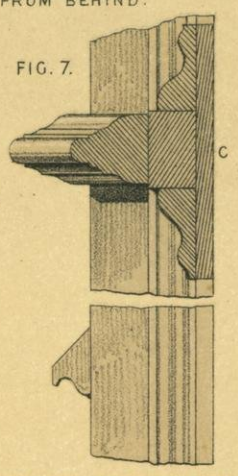
FIG. 6.



PLAN OF STANDARD

½ REAL SIZE.

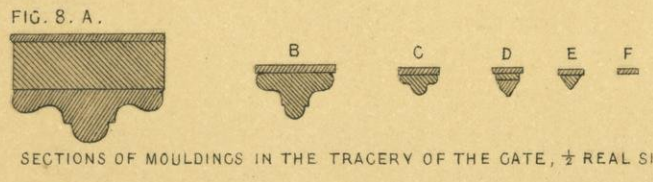
FIG. 7.



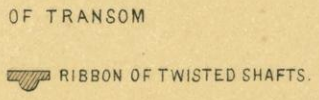
SECTION OF TRANSOM

ORNAMENT COVERING JUNCTIONS.

FIG. 8. A.



SECTIONS OF MOULDINGS IN THE TRACERY OF THE GATE, ½ REAL SIZE.



RIBBON OF TWISTED SHAFTS.

FIG. 9.

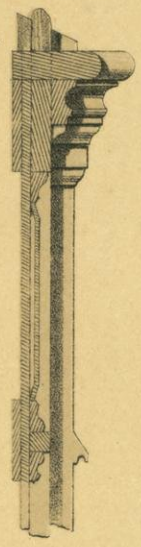
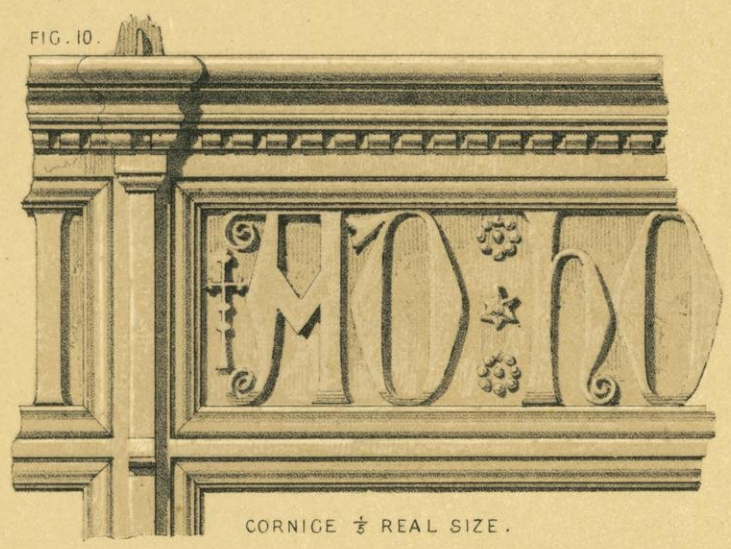
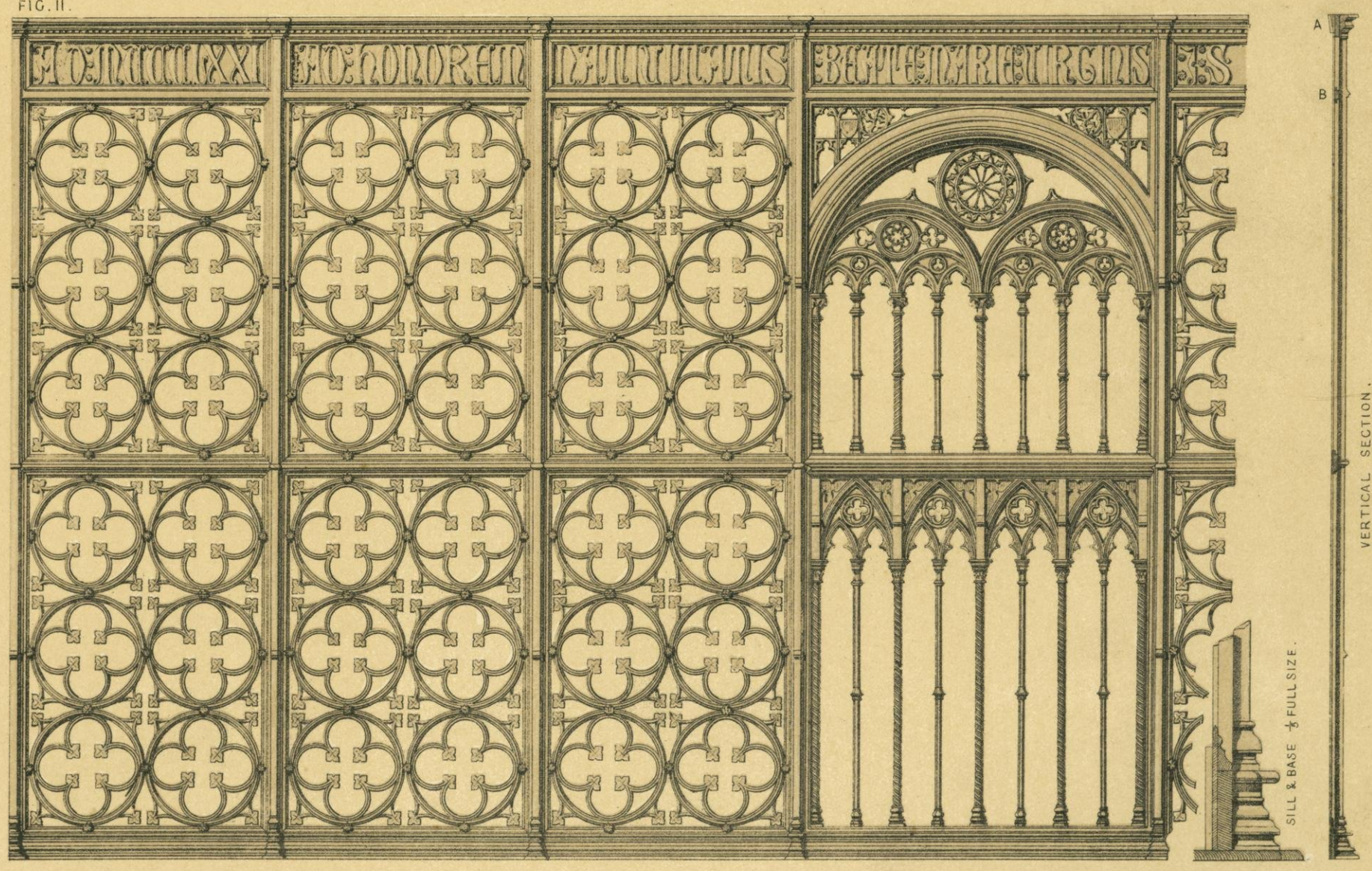


FIG. 10.



CORNICE ⅓ REAL SIZE.

FIG. 11.



SILL & BASE ¼ FULL SIZE.

VERTICAL SECTION.

SCREEN FROM THE CHURCH OF SANTA CROCE _ FLORENCE __ ELEVATION OF ONE HALF WITH GATE.

E. WILLSON, DEL.

M.D. WYATT, DIRXT

F. BEDFORD, LITH.

Day & Son, Lithrs to The Queen.

ITALIAN, LATE XVIth CENTURY — BRONZE CANDELABRUM, PURCHASED AT BRESCIA,
IN THE POSSESSION OF LEWIS WYATT, ESQ^{RE}

M. DIGBY WYATT, DEL.

F. BEDFORD, LITH.

Day & Son, lith^{rs} to the Queen

SIENNESE.

FIG. 1.

M.D.WYATT, DEL.

CHALICE IN PRIVATE POSSESSION_IN ENGLAND.

UMBRIAN_LATE XIVTH CENTY.

FIG. 2.

M.D.WYATT, DEL.

CHALICE PRESERVED IN THE TREASURY OF SAN DOMENICO_PERUGIA.

VENETIAN_EARLY XVTH CENTY

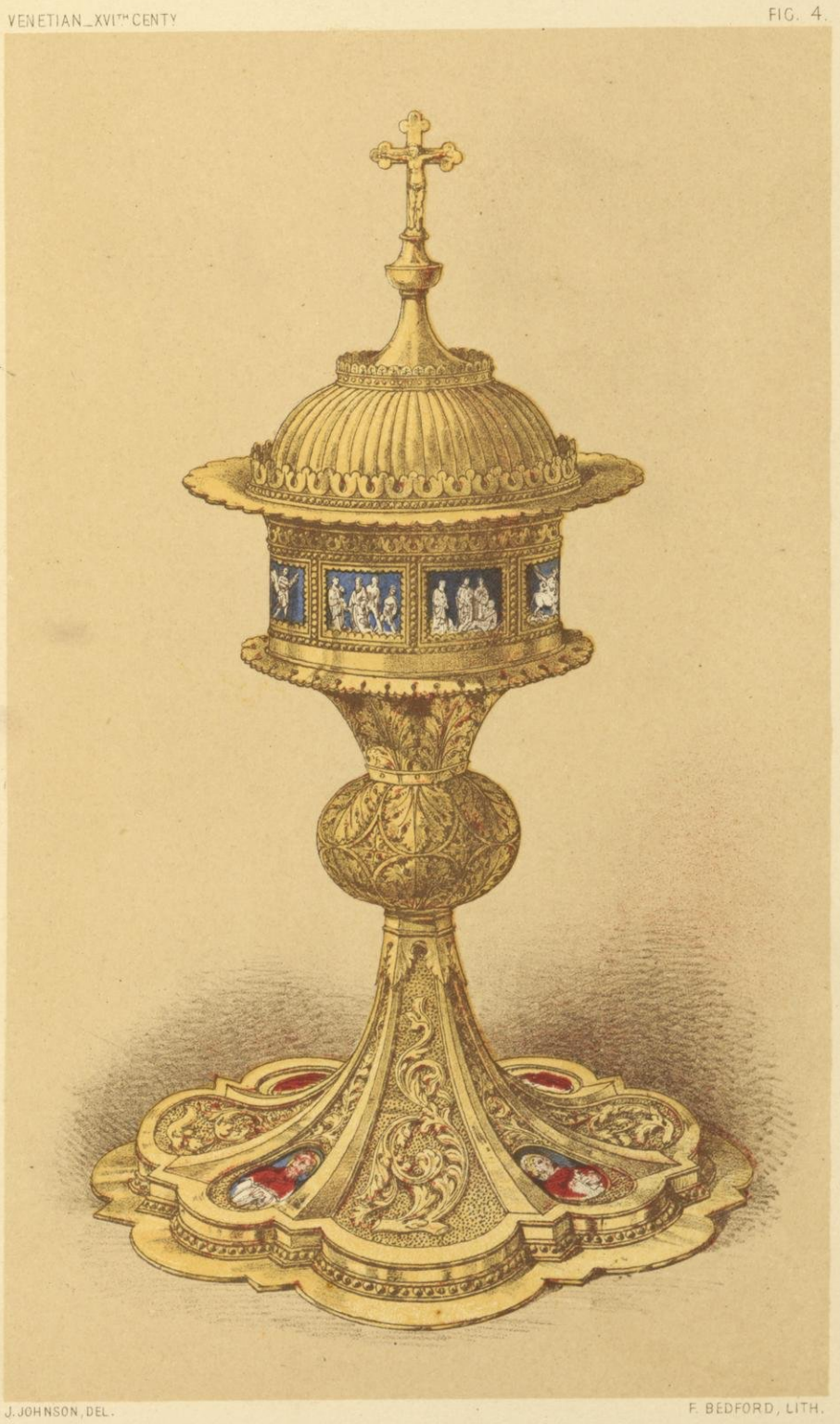
FIG. 3.

J.JOHNSON, DEL.

CIBORIUM IN PRIVATE POSSESSION_VENICE.

VENETIAN_XVI^TH CENTY

FIG. 4.



J.JOHNSON, DEL.

F. BEDFORD, LITH.

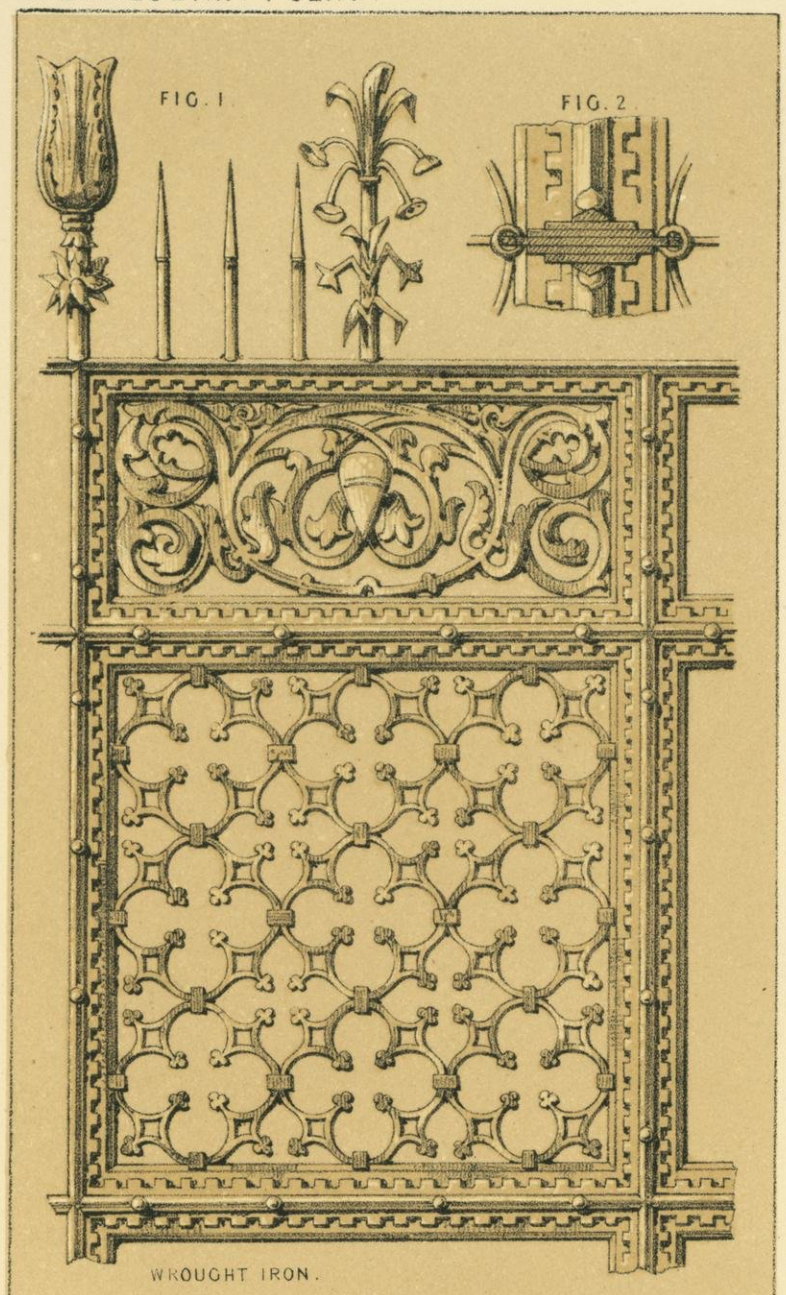
CIBORIUM IN PRIVATE POSSESSION_VENICE.

DAY&SON, LITH^RS TO THE QUEEN.

SIENNESE. XIVTH CENT^Y

FIG. 1

FIG. 2



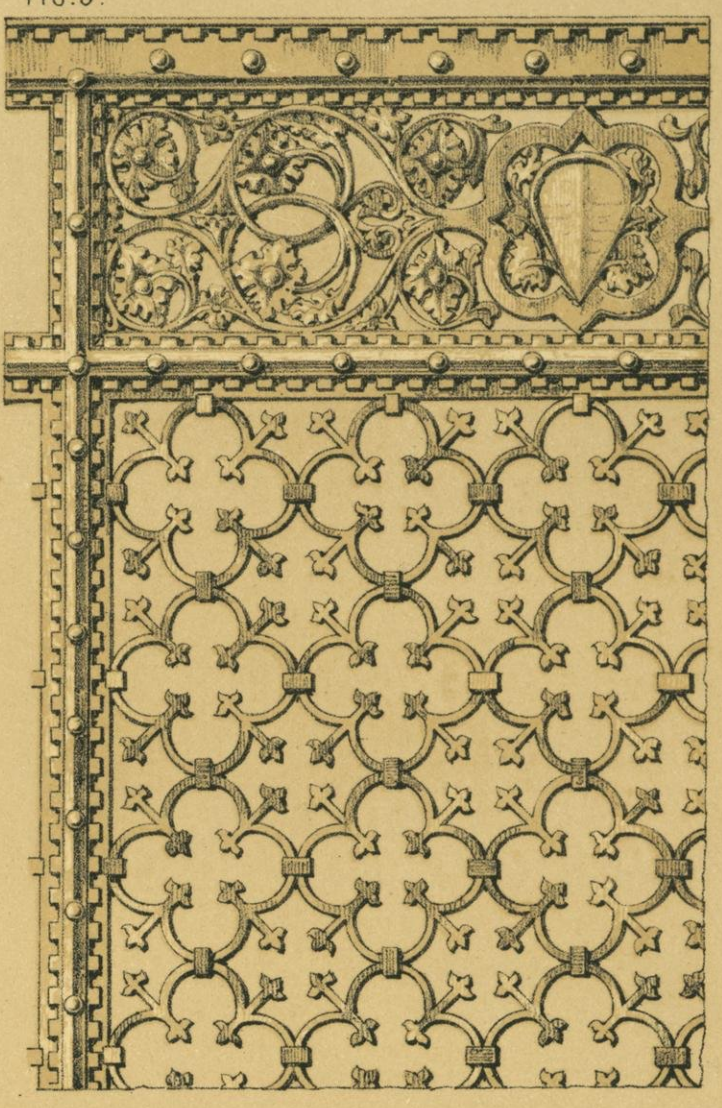
WROUGHT IRON.

PORTION OF A GRILLE IN THE CHAPEL OF THE PALAZZO PUBLICO.—SIENNA.

FLORENTINE XIVTH CENT^Y

PLATE—N°5.

FIG. 3.

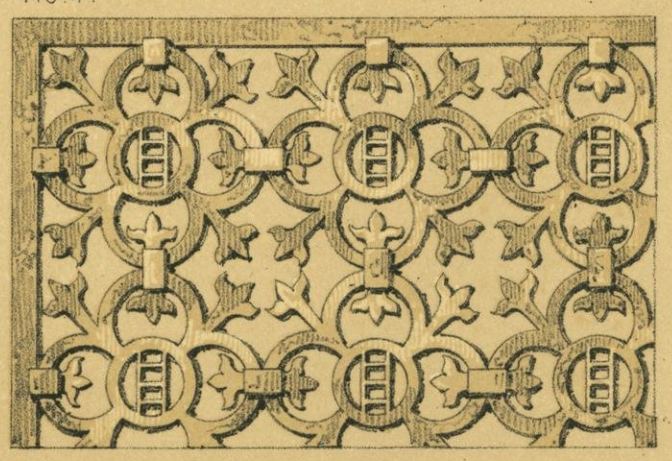


ENTIRELY EXECUTED IN WROUGHT IRON.

PORTION OF A GRILLE IN THE CHURCH OF LA SANTA TRINITA.—FLORENCE.

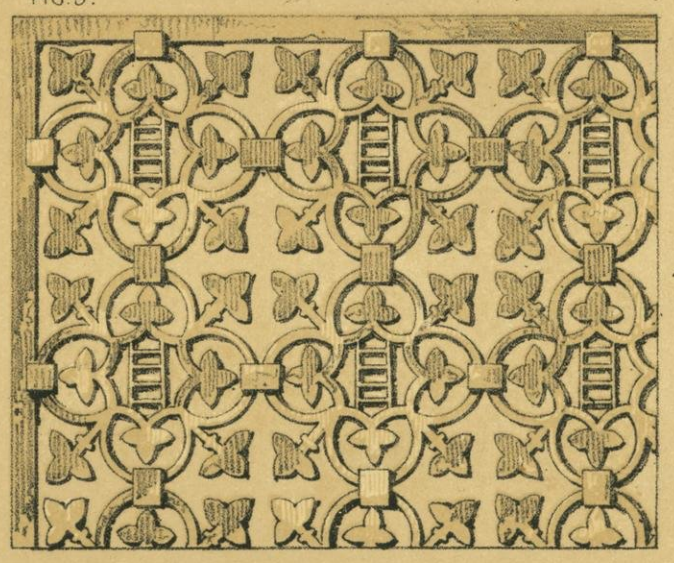
FROM VERONA XVTH CENT^Y

FIG. 4.



WROUGHT IRON.

FIG. 5.



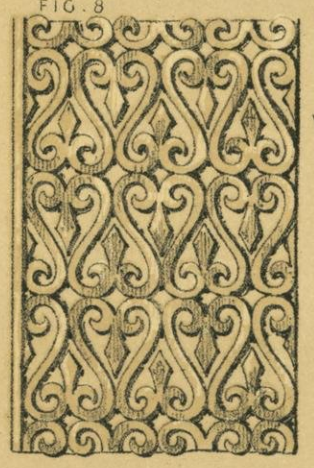
RAILING FROM THE TOMBS OF THE SCALIGERS.—VERONA.

VENETIAN XVIITH CENT^Y

FIG. 6

FIG. 7

FIG. 8



ENTIRELY IN WROUGHT IRON.

FIG. 9.

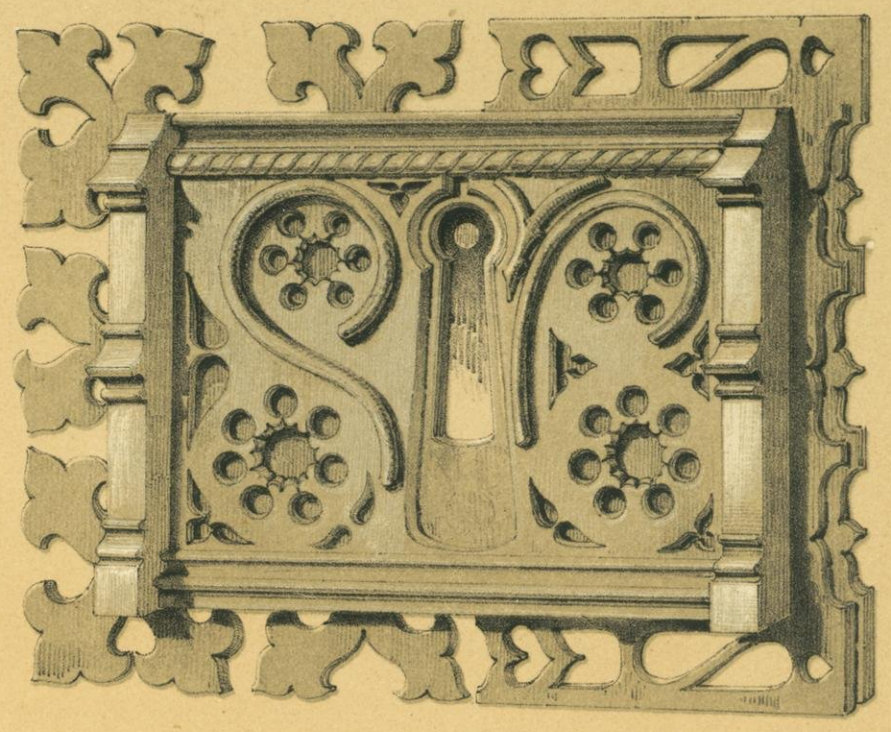
DOOR AND WINDOW ORNAMENTS FROM SAN GIORGIO DEI GRECI.—VENICE.

M. DIGBY WYATT, DEL.

F. BEDFORD, LITH

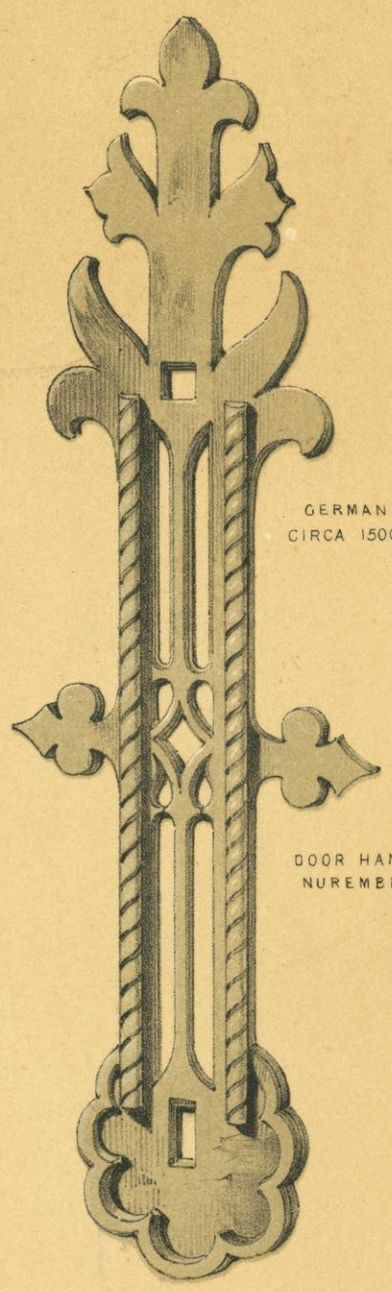
Day & Son Lith^rs to The Queen.

GERMAN _ LATE XIVth CENY
DOOR HANDLE _ NUREMBERG.



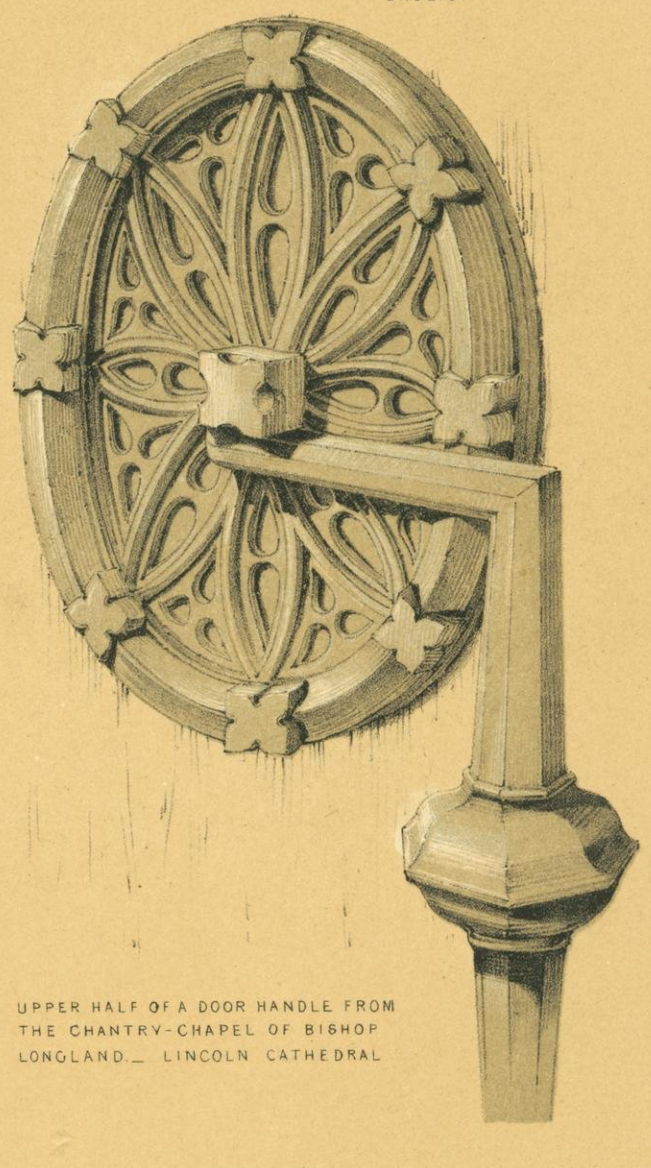
GERMAN _ LATE XVth CENY
LOCK _ NUREMBERG.

XVth CENTURY
ENGLISH



GERMAN
CIRCA 1500.

DOOR HANDLE
NUREMBERG.

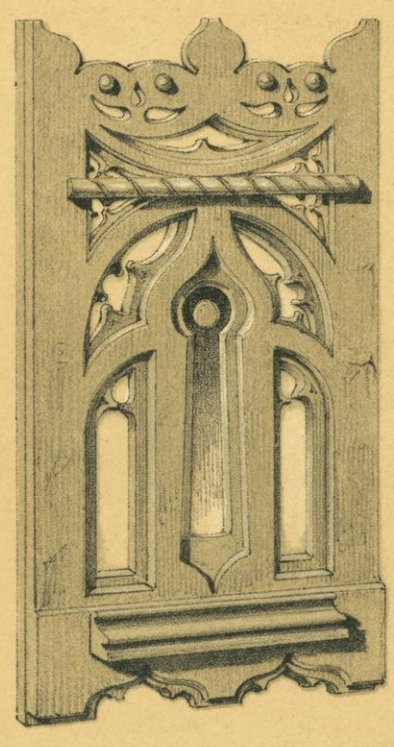


UPPER HALF OF A DOOR HANDLE FROM
THE CHANTRY-CHAPEL OF BISHOP
LONGLAND _ LINCOLN CATHEDRAL

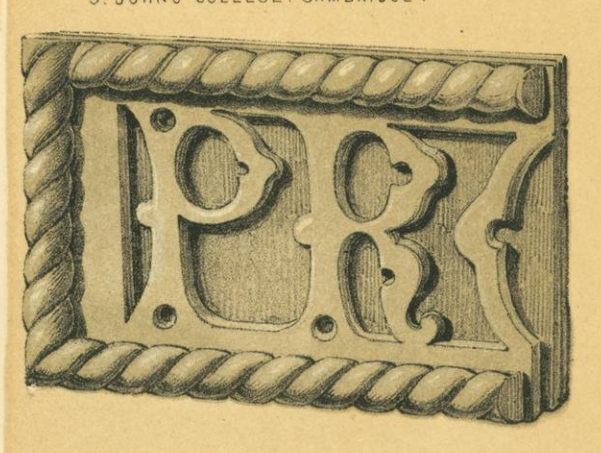
GERMAN.
LATE XVth CENTY

DOOR HANDLE.
NUREMBERG.

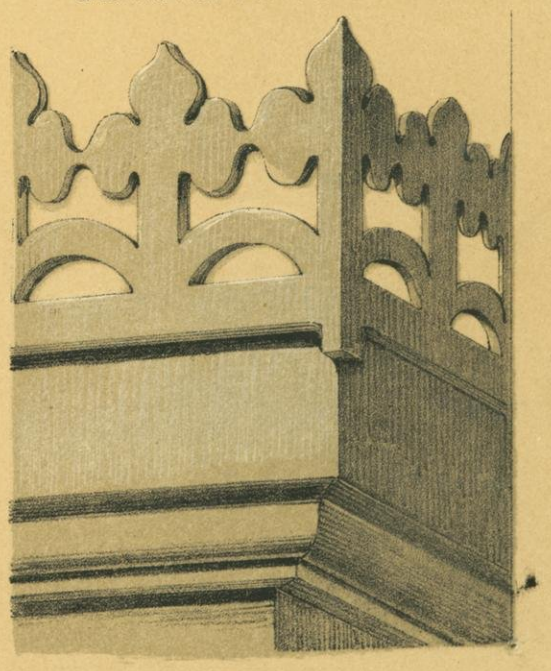
GERMAN _ LATE XIVth CENTY
DOOR ESCUTCHEON _ NUREMBERG.

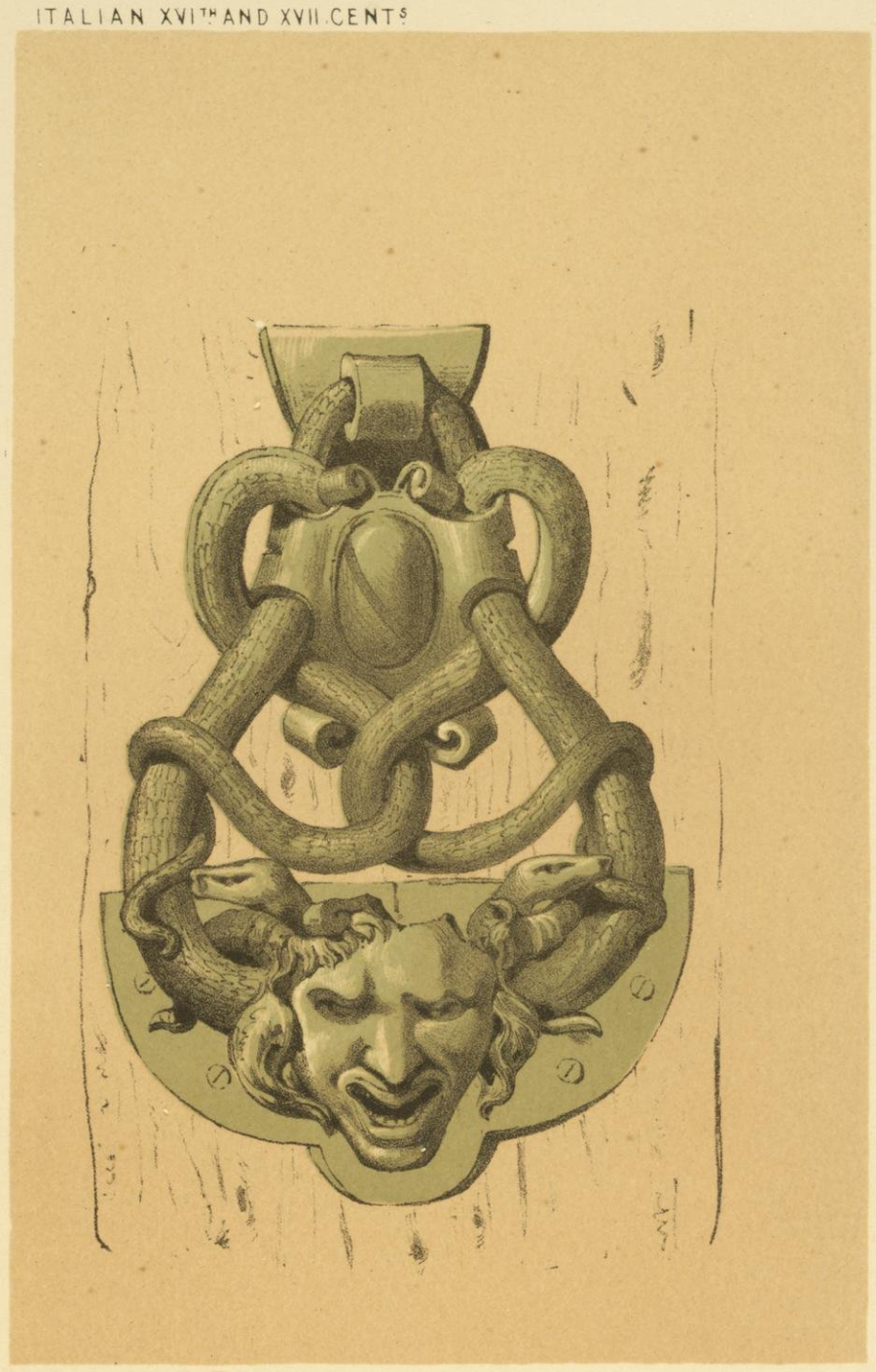


ENGLISH _ EARLY IN THE XVIth CENTURY.
FROM A TOMB IN THE ANTE CHAPEL.
ST JOHN'S COLLEGE. CAMBRIDGE.



ENGLISH. EARLY XVIth CENTURY
CRESTING FROM ST JOHN'S CAMBRIDGE.



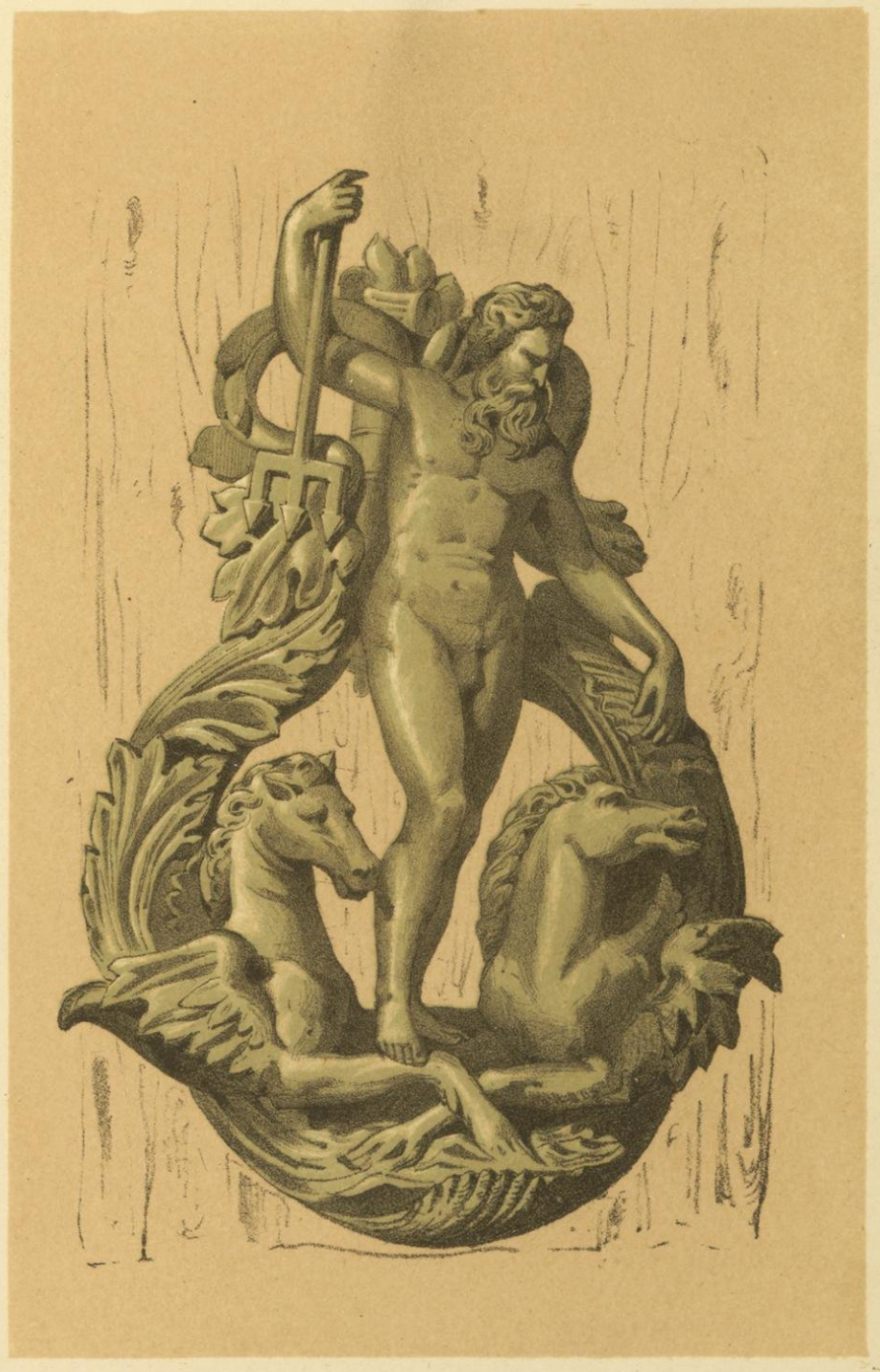


KNOCKER. FROM A PRIVATE HOUSE. VENICE

KNOCKER FROM THE GRIMANI PALACE. VENICE.

M. DIGBY WYATT, DEL.

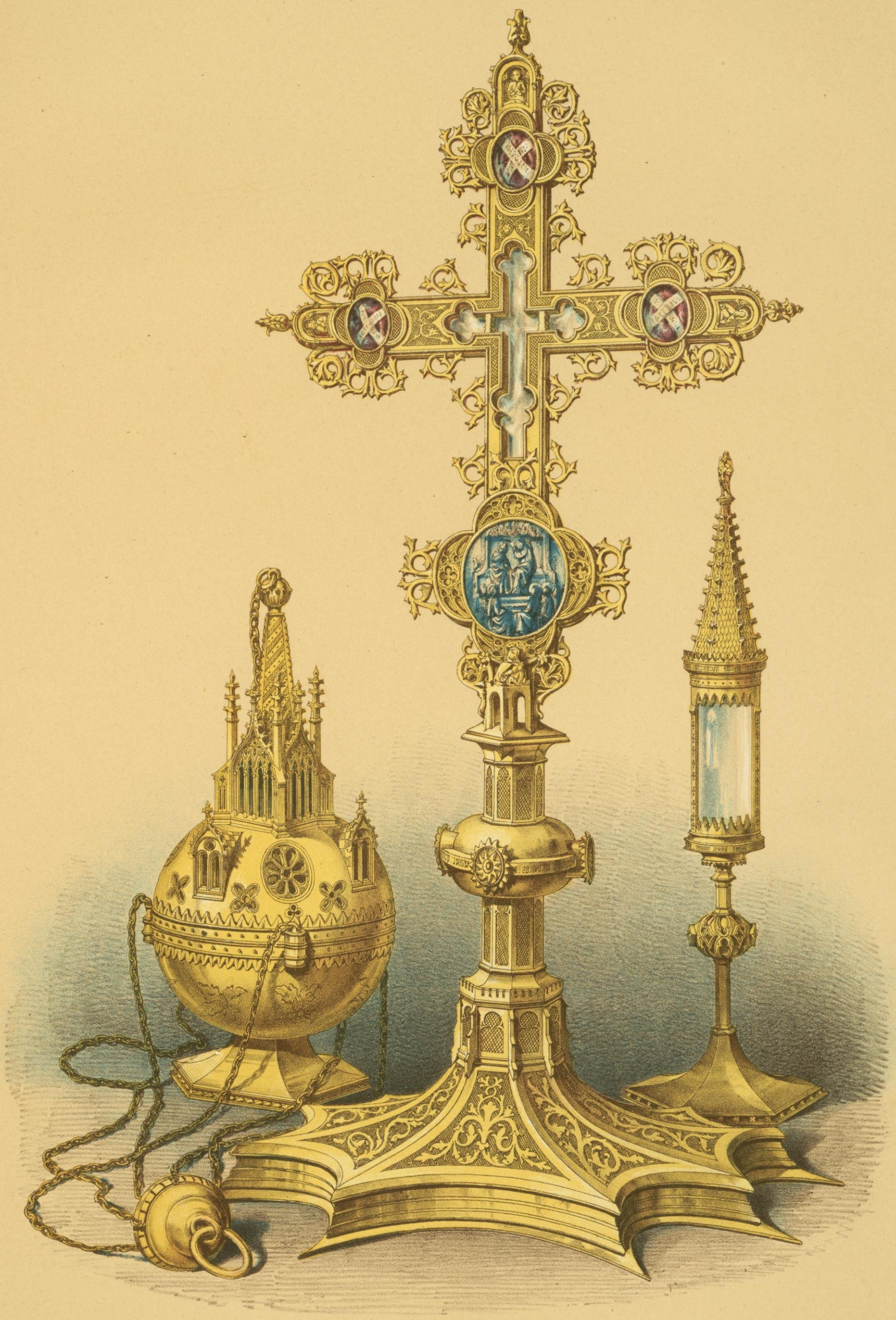
KNOCKER, FROM BOLOGNA.
(ASCRIBED TO GIOVANNI DI BOLOGNA.)



F. BEDFORD, LITH.

KNOCKER, FROM THE PISANI PALACE. VENICE.

DAY & SON, LITH^RS TO THE QUEEN.



RELIQUARIES AND THURIBLE FROM THE CHURCH AT GRAEFÜRT, NEAR DUSSELDORF.

ARRANGED FROM SKETCHES BY C. BARRY, JUN. AND EDWARD BARRY.

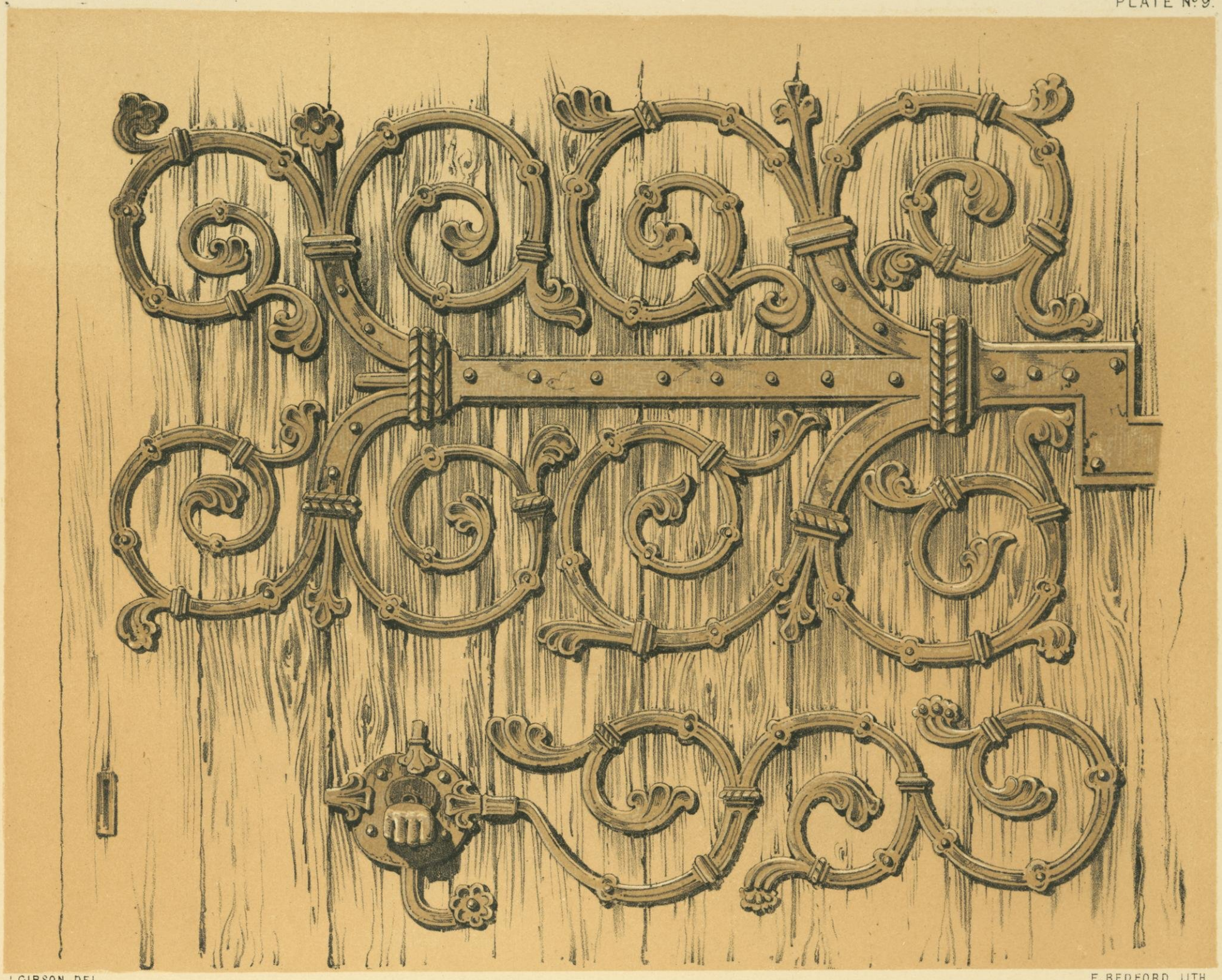
M. D. WYATT, DIRXT

F. BEDFORD, LITH.

DAY & SON, LITHRS TO THE QUEEN.

ENGLISH, XIIITH CENT^{Y}

PLATE Nº 9.

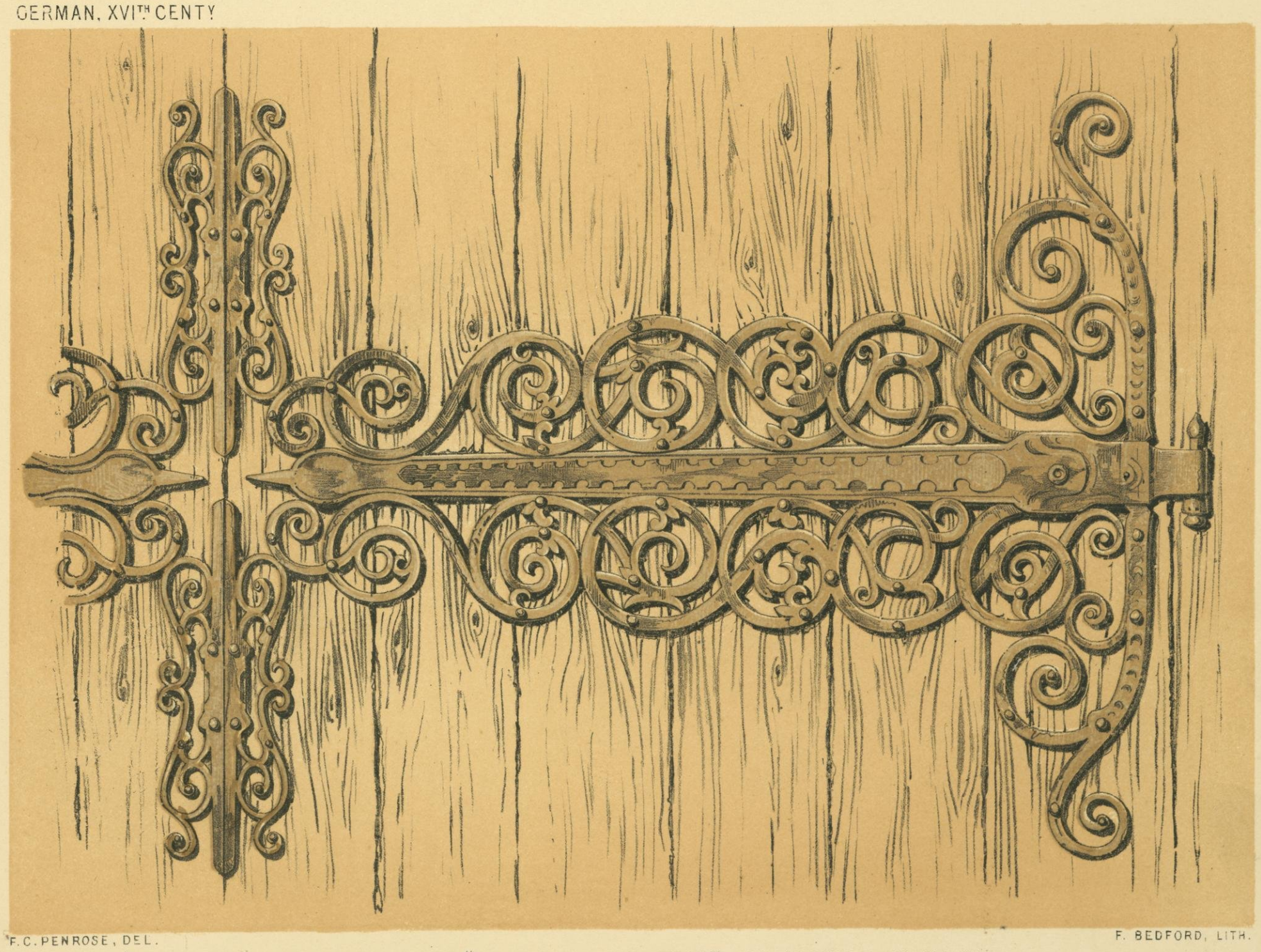


J. GIBSON, DEL.

F. BEDFORD LITH.

HINGE FROM THE CHURCH OF ALL SAINTS — LEIGHTON BUZZARD.

GERMAN, XVITH CENT^{Y}



F. C. PENROSE, DEL.

F. BEDFORD, LITH.

HINGE FROM THE "ESCHENHEIMER THOR" — FRANKFORT AM MAINE.

Day & Son, lith.rs to the Queen.

ENGLISH EARLY XIVTH CENT^Y

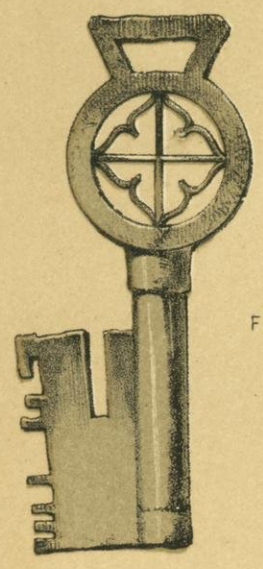


FIG. 1.

KEY FROM BLICKLING CHURCH.
NORFOLK

FRENCH XVTH CENT^Y

FIG. 2.

LOCK FROM AN ELABORATE "DRESSOIR DE SACRISTIE", NOW IN THE HOTEL DE CLUGNY, AT PARIS.

ENGLISH EARLY XIVTH CENT^Y

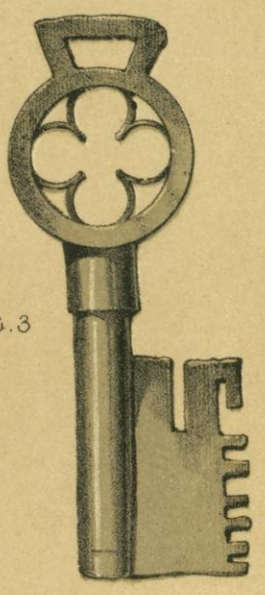


FIG. 3

KEY FROM BLICKLING CHURCH
NORFOLK.

FRENCH XVITH CENT^Y

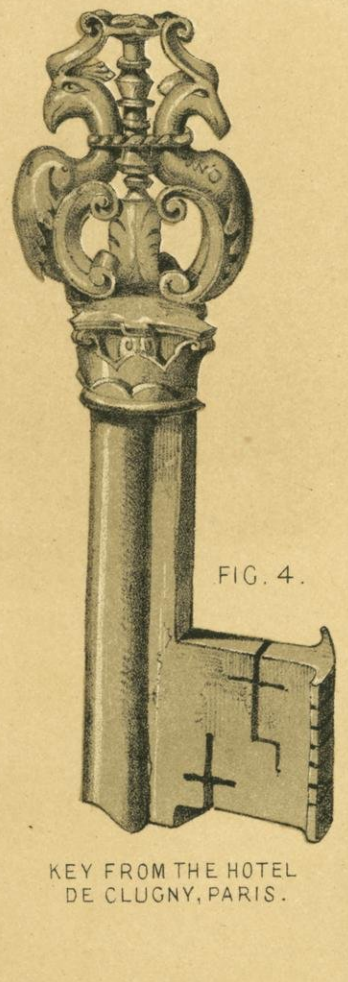


FIG. 4.

KEY FROM THE HOTEL
DE CLUGNY, PARIS.

ENGLISH XIVTH CENT^Y

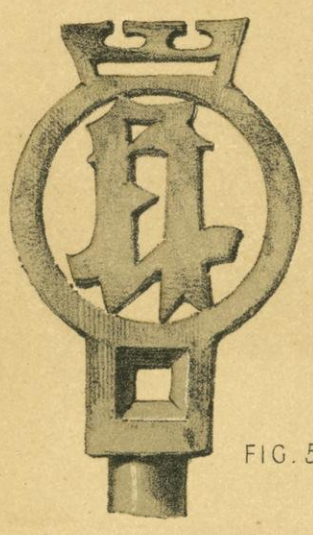


FIG. 5.

KEY FROM BLICKLING CHURCH.
NORFOLK.

FRENCH XVITH CENT^Y

FIG. 6.

KEY FROM THE HOTEL DE CLUGNY,
PARIS.

FRENCH XVITH CENT^Y

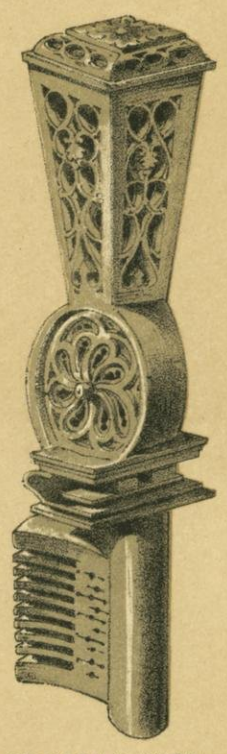


FIG. 7.

KEY FROM THE HOTEL
DE CLUGNY, PARIS.

FRENCH XVIITH CENT^Y

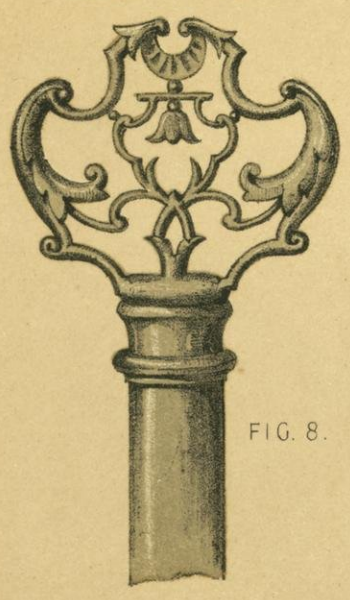


FIG. 8.

KEY FROM THE HOTEL DE CLUGNY, PARIS.

FRENCH XVTH CENT^Y.

FIG. 9.

LOCK IN THE POSSESSION OF MR W. G. ROGERS.

FRENCH XVITH CENT^Y

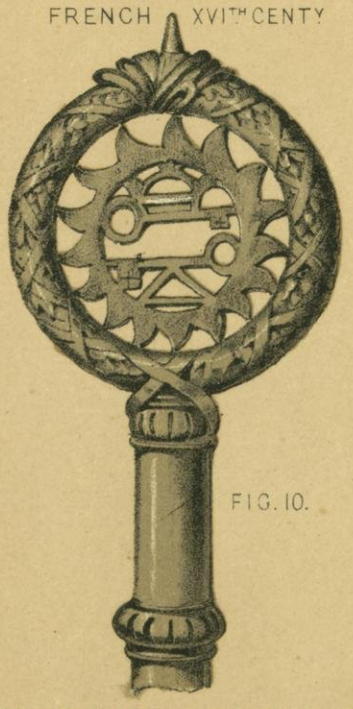


FIG. 10.

KEY IN THE POSSESSION OF MR PRATT.

W. BURGES, DEL.

M. D. WYATT DIR^XT

F. BEDFORD LITH.

FIG. 1.

FIG. 2.

FIG. 3.

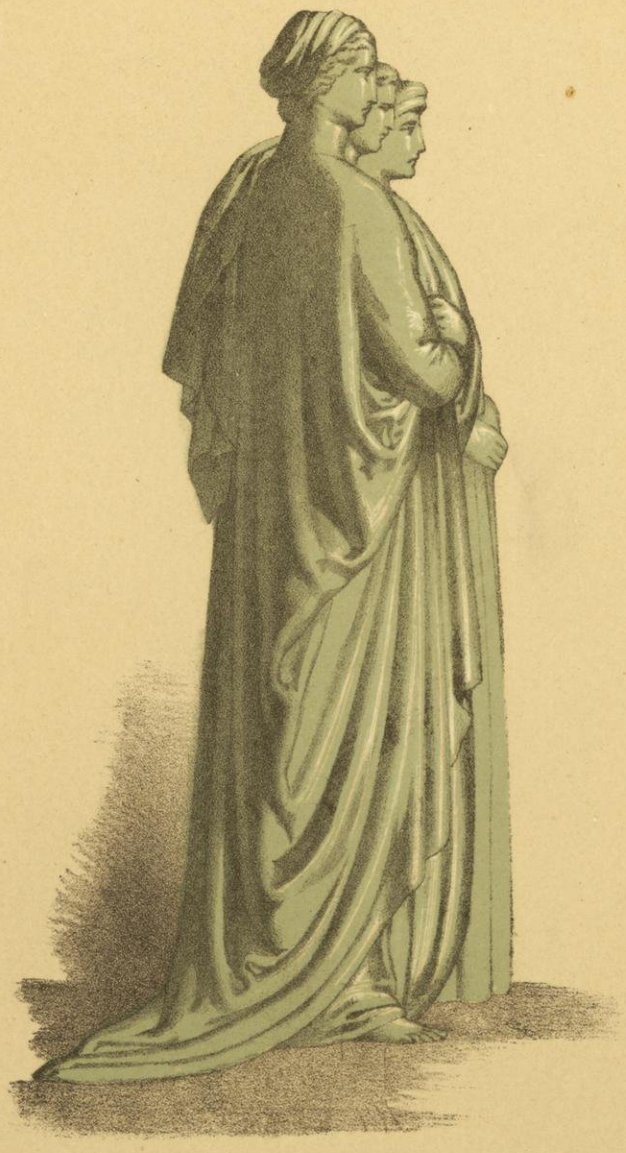


FIG. 4.

M. DIGBY WYATT, DIR.T

F. BEDFORD, LITH.

FIGURES FROM THE BRONZE GATES (BY GHIBERTI) OF THE BAPTISTERY, FLORENCE.

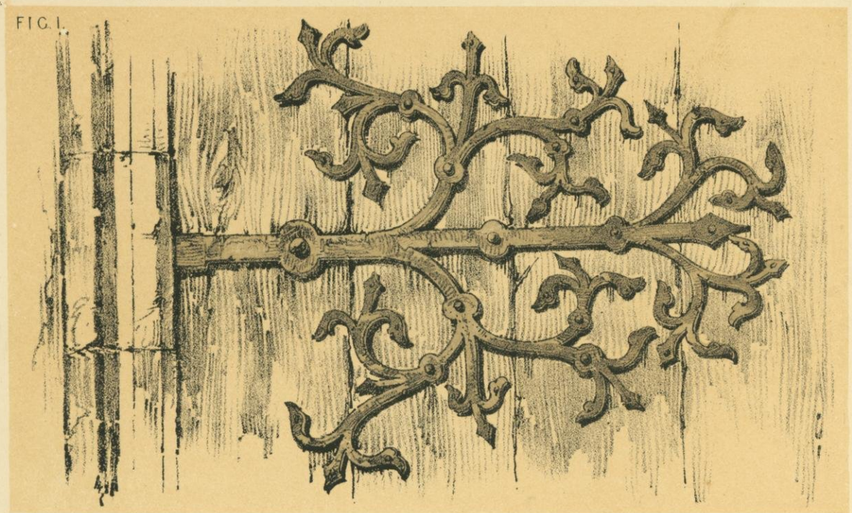
DAY & SON, LITH.rs TO THE QUEEN.

M.DIGBY WYATT. DEL. F. BEDFORD, LITH.

CHALICE BROUGHT FROM LA MARCA, IN THE POSSESSION OF THE MARQUIS OF DOUGLAS.

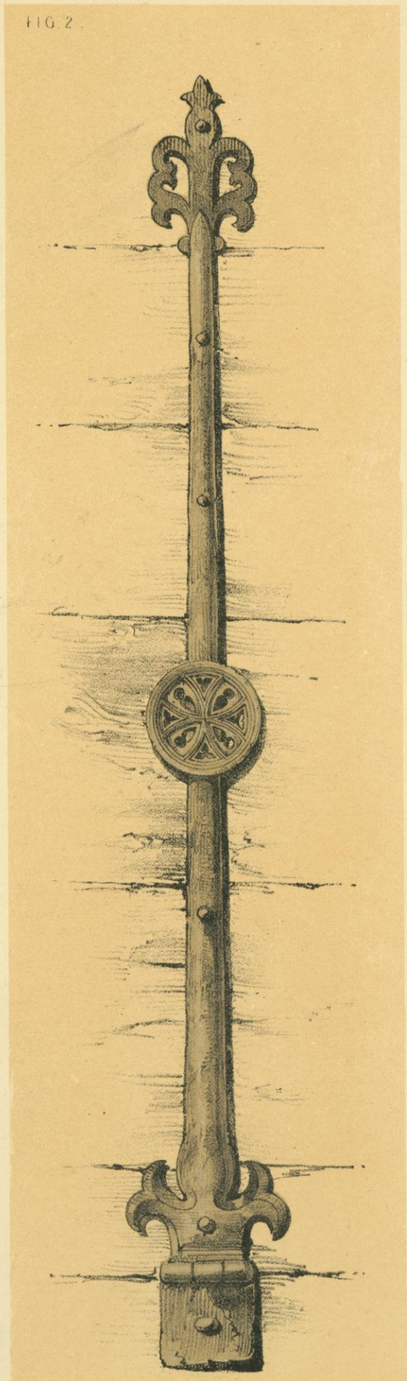
DAY & SON, LITH^RS TO THE QUEEN.

FIG.1.



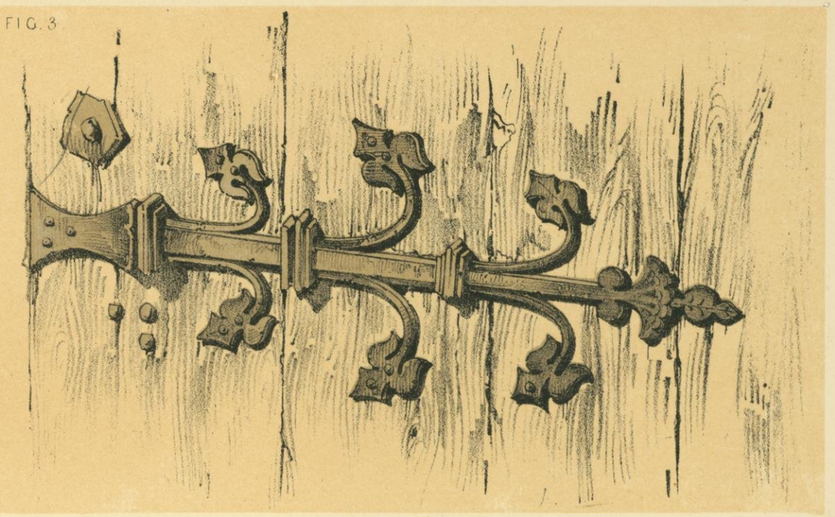
HUNSTANTON, LINCOLNSHIRE._MIDDLE OF 14TH CENTY.

FIG.2.



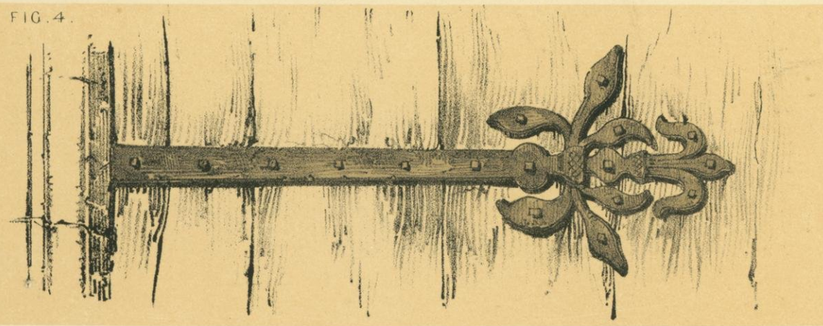
15TH CENTY._Mr PRATT.

FIG.3.



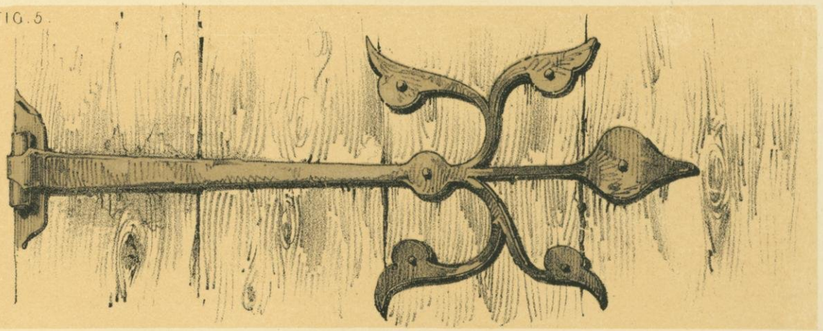
LIEGE._14TH CENTY.

FIG.4.



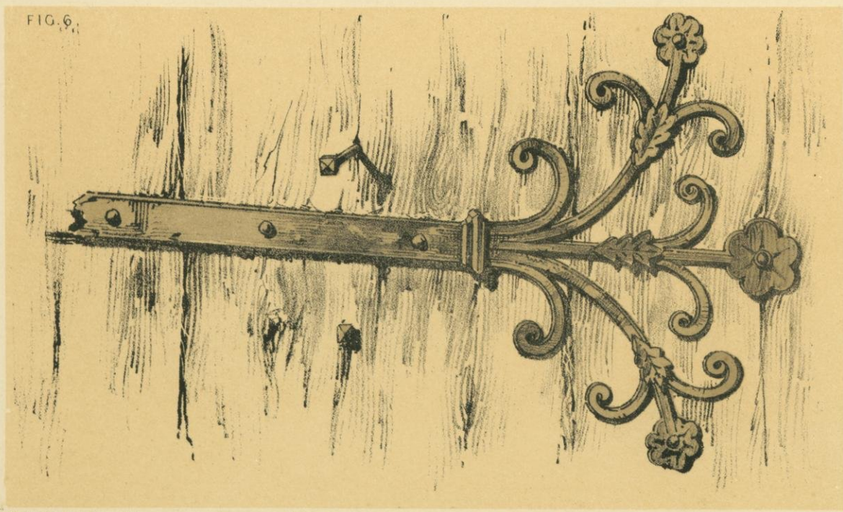
FROM CHOIR, WELLS CATHEDRAL._MIDDLE OF 14TH CENTY.

FIG.5.



14TH CENTY.

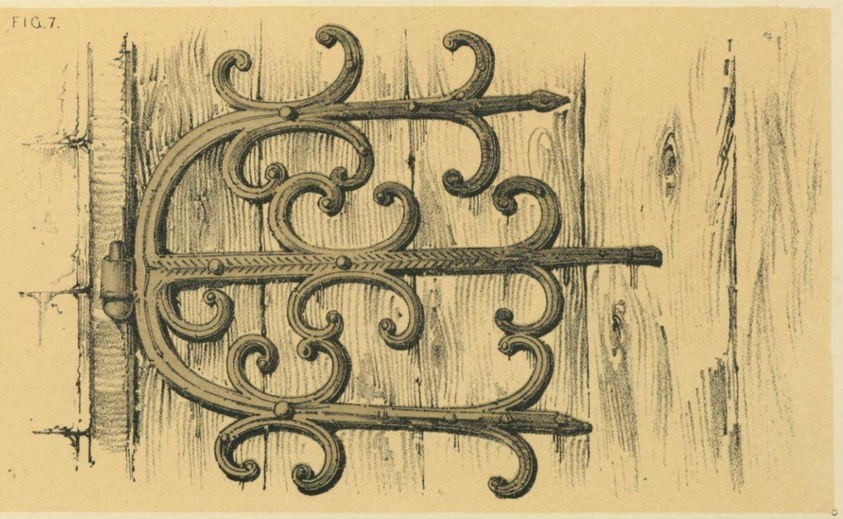
FIG.6.



M. DIGBY WYATT, DEL.

ROUEN CATHEDRAL._14TH CENTY.

FIG.7.



EARLY, 12TH CENTY.

F. BEDFORD, LITH.

DAY & SON, LITHRS to THE QUEEN.

FIG. 1.

FRENCH. *
GIVEN BY SUGER TO S. DENIS.
CIRCA. 1150.

"BURETTE"_ IN THE MUSEUM OF THE LOUVRE. PARIS.

FRENCH._ EARLY XVITH CENTY

FIG. 2

CRYSTAL BURETTE._ IN THE MUSEUM OF THE LOUVRE. PARIS.

FRENCH. _ LATE XIIITH CENTY

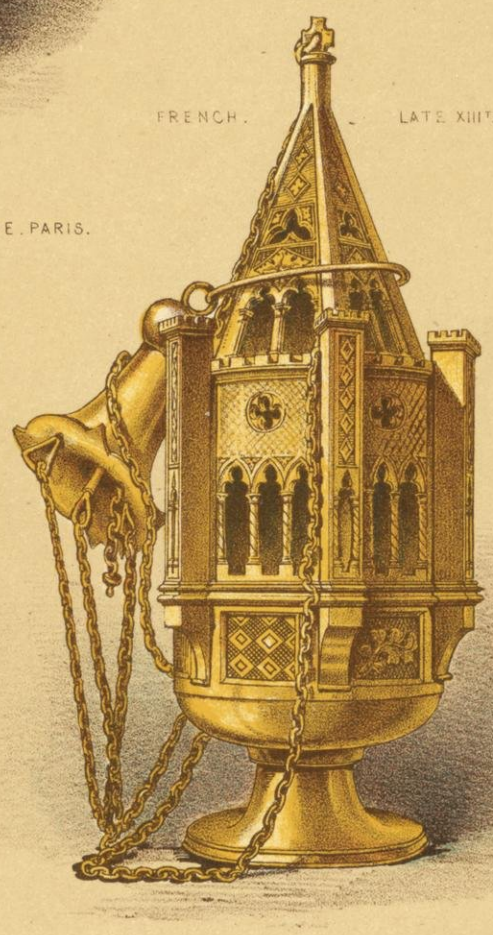


FIG. 3.

THURIBLE._ FROM THE HOTEL DE CLUNY. PARIS.

FRENCH._ EARLY XVITH CENTY

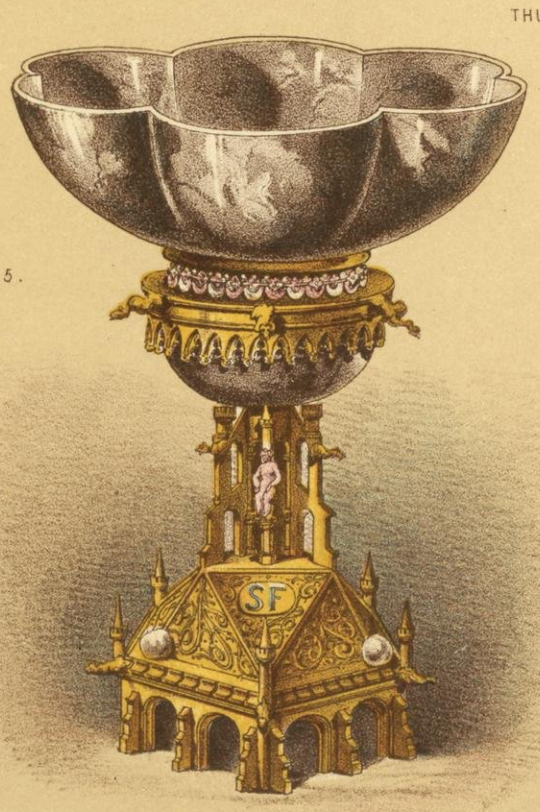


FIG. 5.

DRINKING CUP._ IN MUSEUM OF THE LOUVRE. PARIS.

FRENCH._ XVIITH CENTY

FIG. 4.

THURIBLE._ IN MUSEUM OF HOTEL DE CLUNY. PARIS.

W. BURGES, DEL.

M. DIGBY WYATT, DIR^T

F. BEDFORD, LITH.

DAY & SON, LITH^RS TO THE QUEEN.

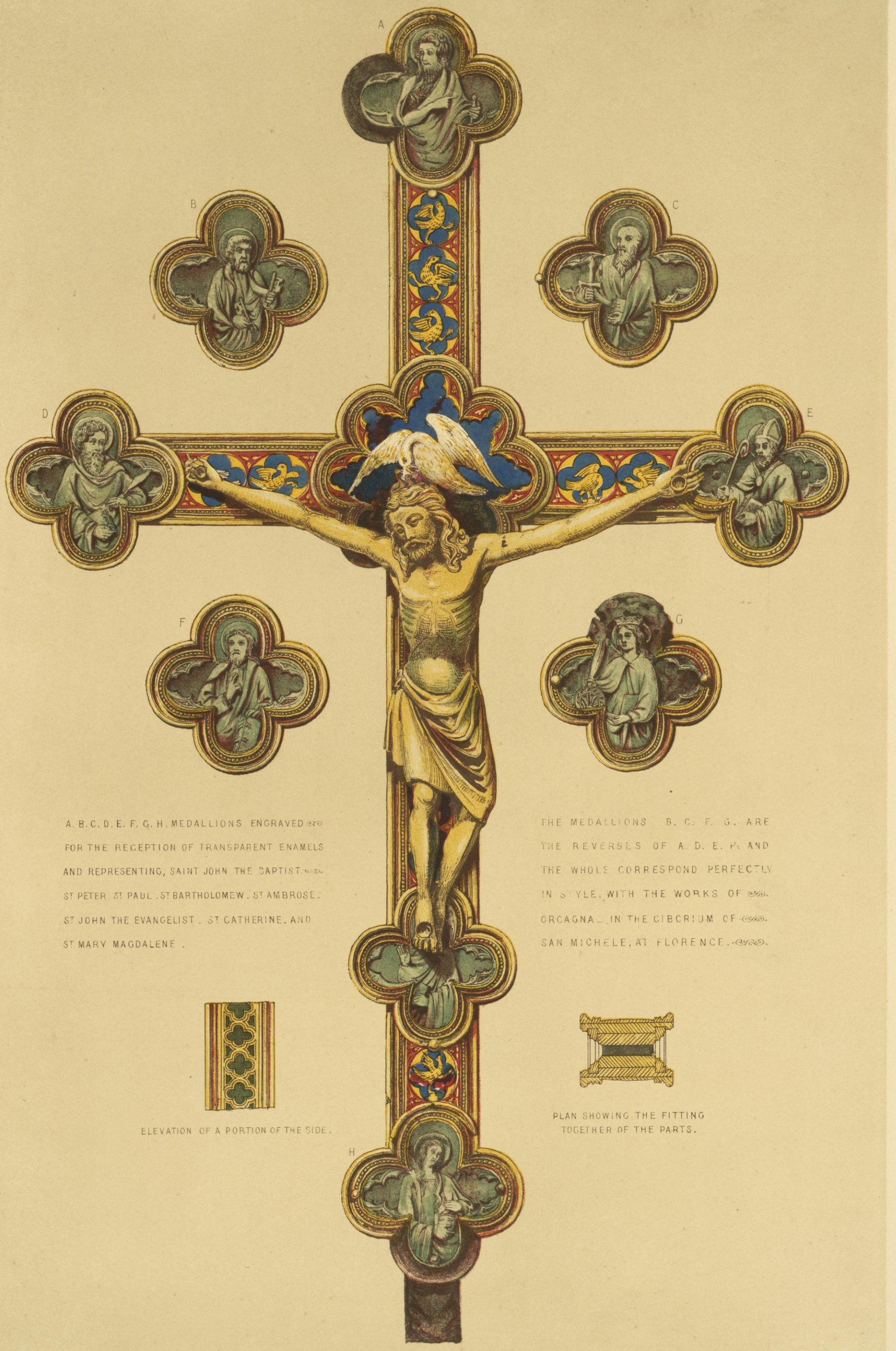
BRONZE DOOR-HANDLE, REPRESENTING THE EMPEROR AND THE SEVEN ELECTORS.

FROM THE RATH-HAUS AT LUBECK.

EDWARD FALKENER, DEL.

F. BEDFORD, LITH.

Day & Son, Lith^rs to The Queen.



A. B. C. D. E. F. G. H. MEDALLIONS ENGRAVED FOR THE RECEPTION OF TRANSPARENT ENAMELS AND REPRESENTING, SAINT JOHN THE BAPTIST. St PETER. St PAUL. St BARTHOLOMEW. St AMBROSE. St JOHN THE EVANGELIST. St CATHERINE. AND St MARY MAGDALENE.

THE MEDALLIONS B. C. F. G. ARE THE REVERSES OF A. D. E. H. AND THE WHOLE CORRESPOND PERFECTLY IN STYLE, WITH THE WORKS OF ORCAGNA IN THE CIBORIUM OF SAN MICHELE, AT FLORENCE.

ELEVATION OF A PORTION OF THE SIDE.

PLAN SHOWING THE FITTING TOGETHER OF THE PARTS.

M. DIGBY WYATT, DEL.

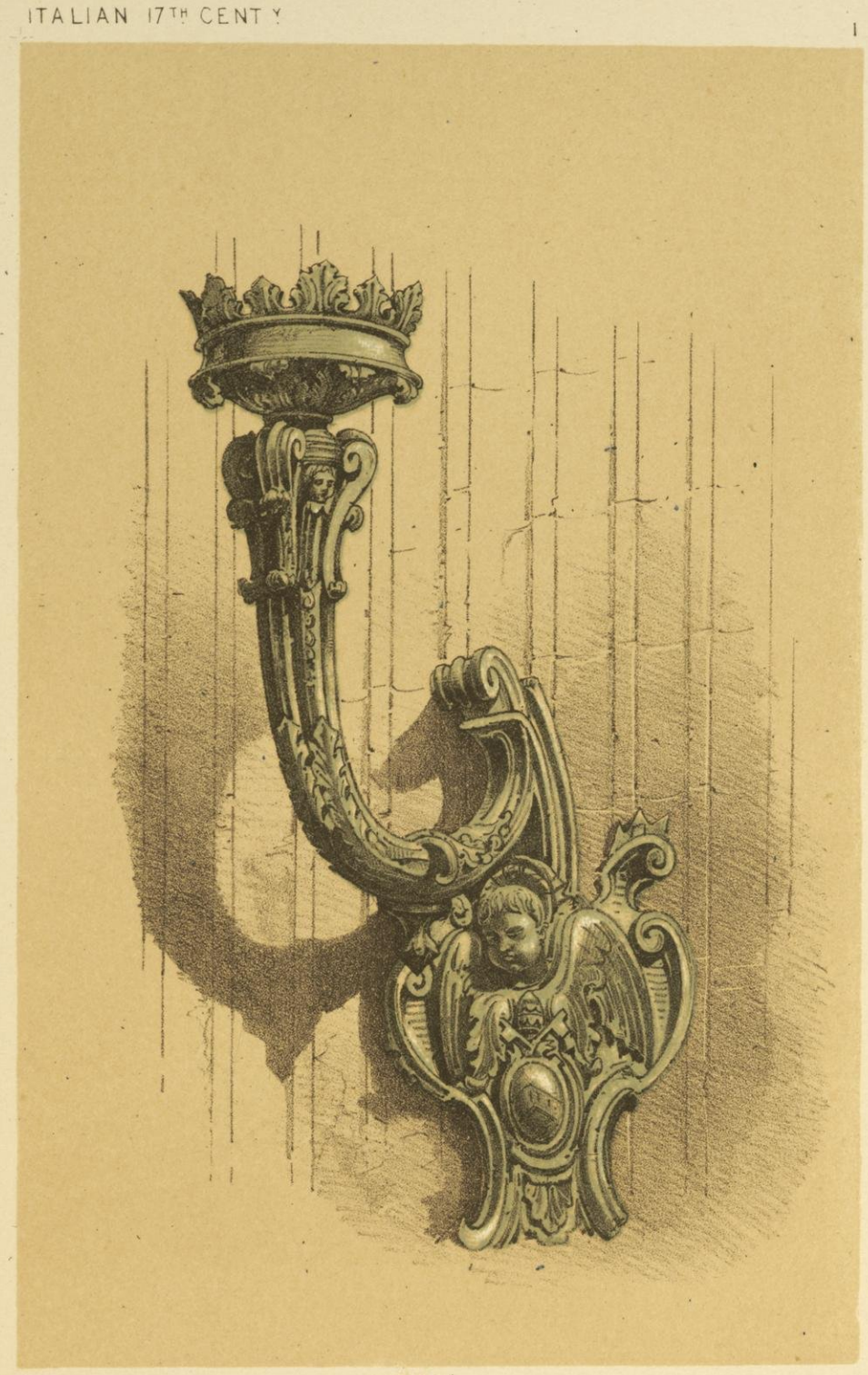
DAY & SON, LITHRS TO THE QUEEN

F. BEDFORD, LITH.

GRAND PROCESSIONAL CROSS, ENRICHED WITH "CHAMP LEVES" AND TRANSPARENT ENAMELS. NOW IN THE MUSEUM OF ECONOMIC GEOLOGY.

ITALIAN 17TH CENTY

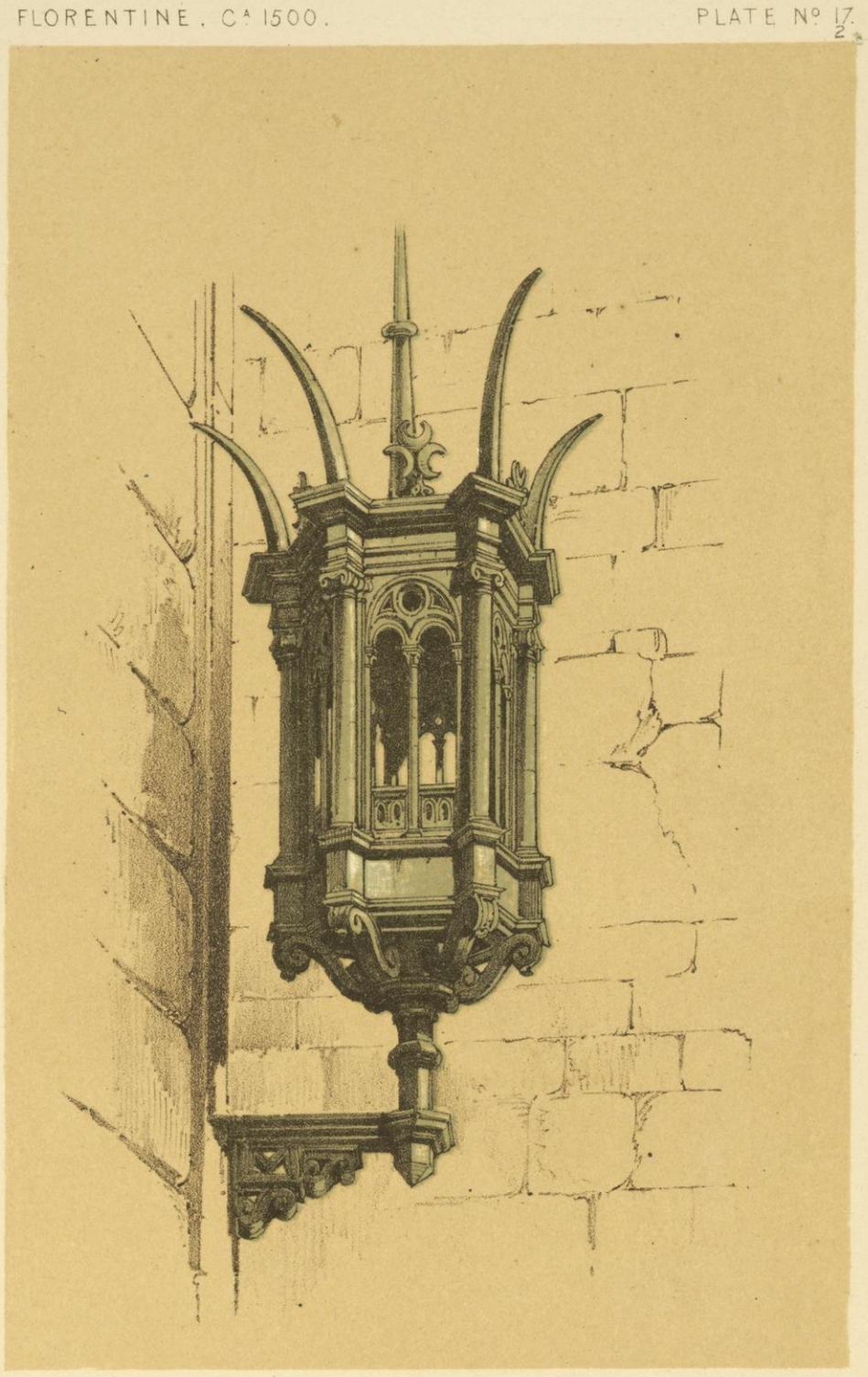
1



BRACKET LAMP, FROM THE CATHEDRAL_BOLOGNA.

FLORENTINE. CA 1500.

PLATE Nº 17.
2



LANTERN FROM THE STROZZI PALACE,_FLORENCE.

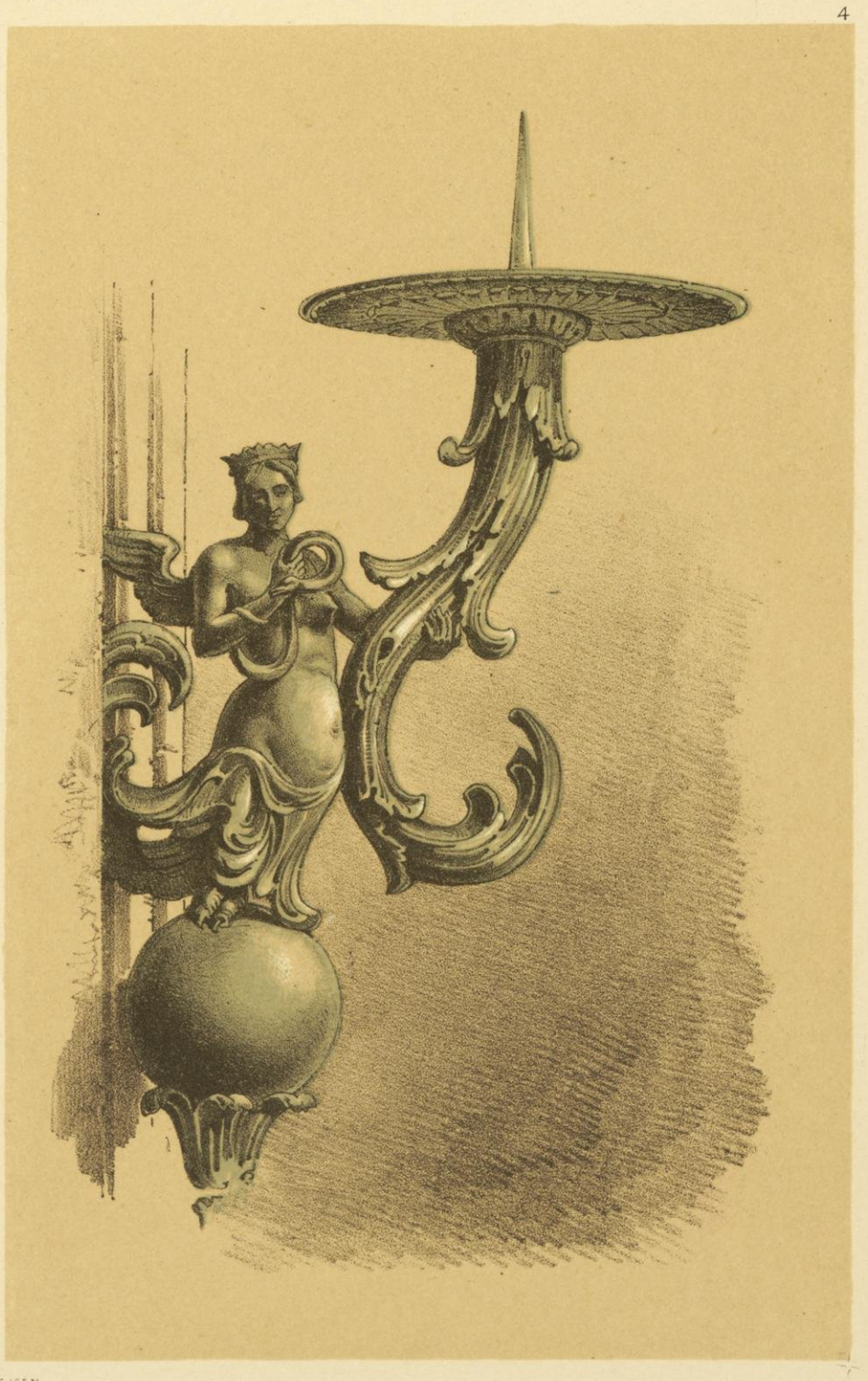
GERMAN, CA 1300.

3

M. DIGBY WYATT, DEL.

BRACKET LAMP FROM THE DOM KIRCHÉ,_INNSPRUCK.

4



DAY & SON LITH^RS TO THE QUEEN.

F. BEDFORD, LITH.

SCONCE FROM ST. SEBALD'S SHRINE, NUREMBERG.

FIGURE FROM THE SHRINE OF SAN ZENOBIA,
(BY GHIBERTI) IN THE CATHEDRAL, FLORENCE.

FIGURE FROM THE FONT IN THE BAPTISTERY, FLORENCE.

M. DIGBY WYATT. DEL.

FIGURE FROM THE GHIBERTI GATES, IN THE BAPTISTERY, FLORENCE.

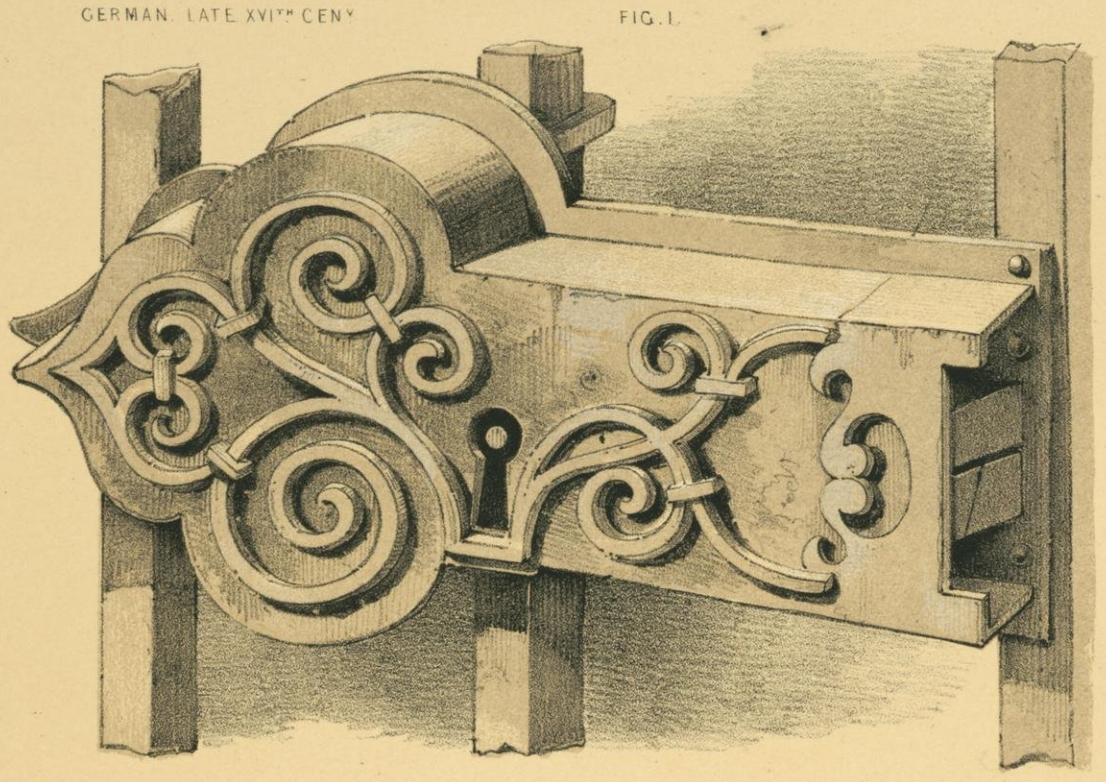
Day & Son, Lith^rs to The Queen.

F. BEDFORD LITH.

FIGURE FROM THE FONT IN THE BAPTISTERY, SIENNA.

GERMAN. LATE XVITH CEN^Y

FIG. 1.



LOCK FROM THE CLOTURE DU CHŒUR OF THE CATHEDRAL, MUNICH.

FIG. 2.

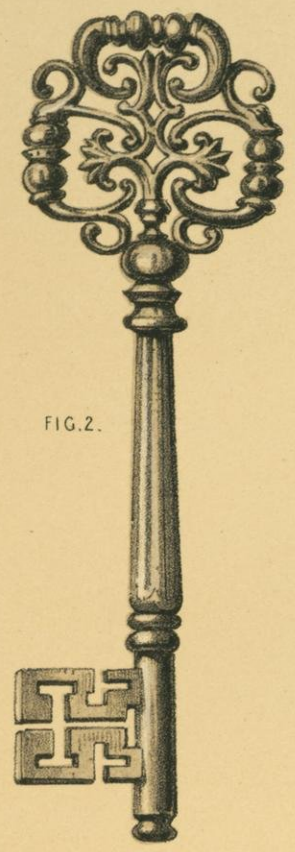
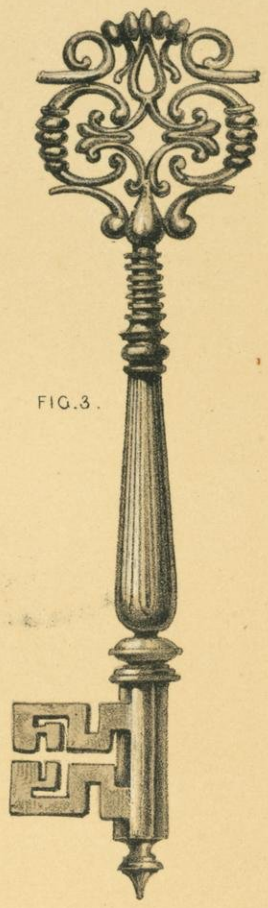
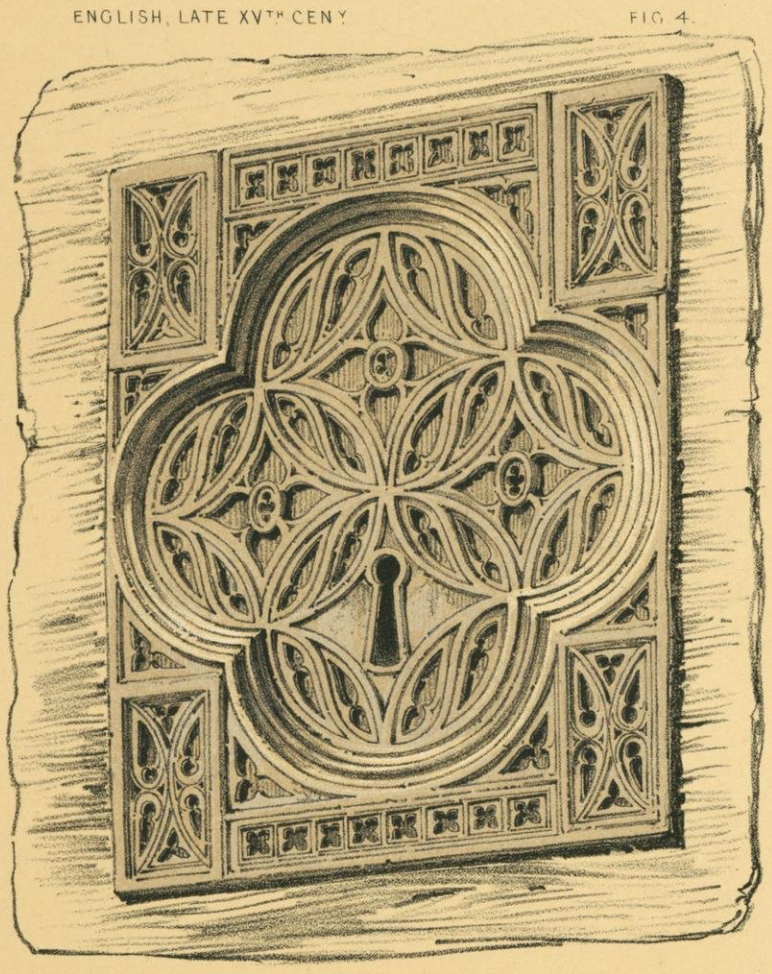


FIG. 3.



ENGLISH, LATE XVTH CEN^Y

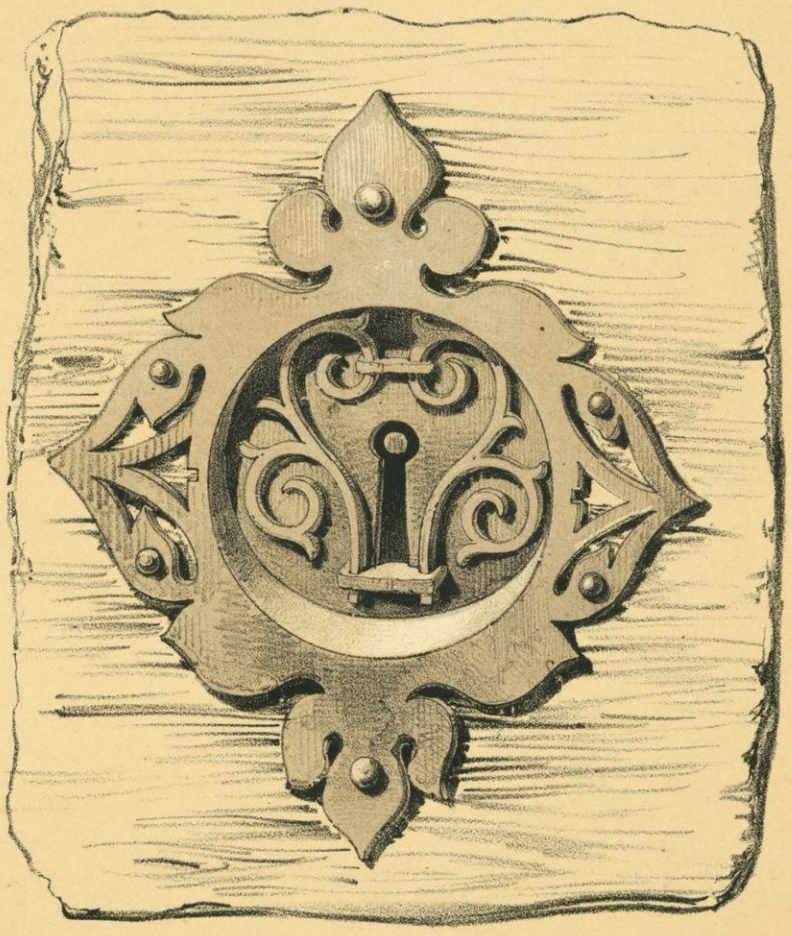
FIG. 4.



BRASS LOCK PLATE FROM THE DOORS OF HENRY VII^THS CHAPEL, AT WESTMINSTER.

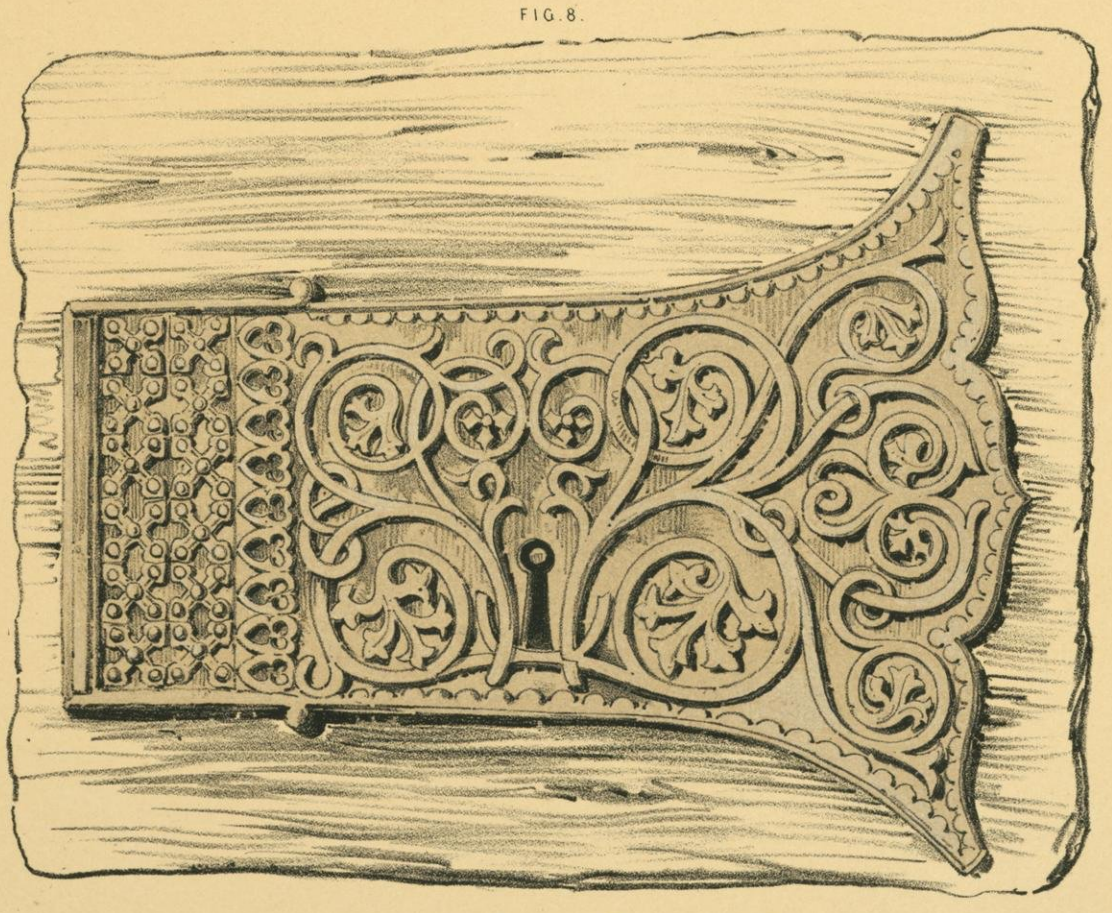
GERMAN, MIDDLE OF XVITH CEN^Y

FIG. 5.



FROM THE CASTLE, AT NUREMBERG.

FIG. 8.



MODERN IRON LOCK FROM THE AÛ KIRCHE, AT MUNICH.
DESIGNED BY HEIDELOFF.

FIG. 6.

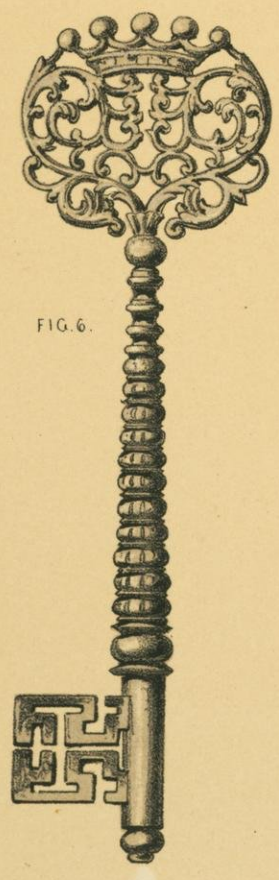


FIG. 7.

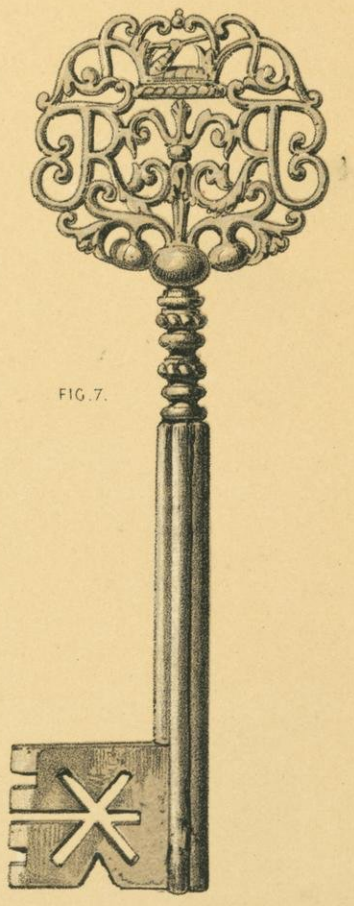


FIG. 1.

FIG. 2.

DETAIL OF A PORTION OF THE

ENAMELLED ORNAMENT.

FULL SIZE

FIG. 3.

PASTORAL STAFF OF SAN CERBONI,

PRESERVED IN THE

CATHEDRAL OF SIENNA.

F. C. PENROSE DEL_M. D. WYATT DIREXT

DAY & SON, LITHS TO THE QUEEN.

F. BEDFORD, LITH.

F. BEDFORD, LITH.

DAY & SON, LITH^RS TO THE QUEEN.

CHALICE FROM CALABRIA. CIBORIUM. FROM VENICE. MONSTRANCES FROM GRAEFURT. NEAR DUSSELDORF.

M. D. WYATT, DEL. FROM SKETCHES BY J. JOHNSON, C. BARRY, JUN^R & J. ROBERTS.

ITALIAN. XVII CENTY

FIG. 1.

ITALIAN, XVIITH CENTY

FIG. 2.

ITALIAN. XVITH CENTY

FIG. 3.

ITALIAN. XVITH CENTY

FIG. 4.

M. J. C. By WYATT, DEL.

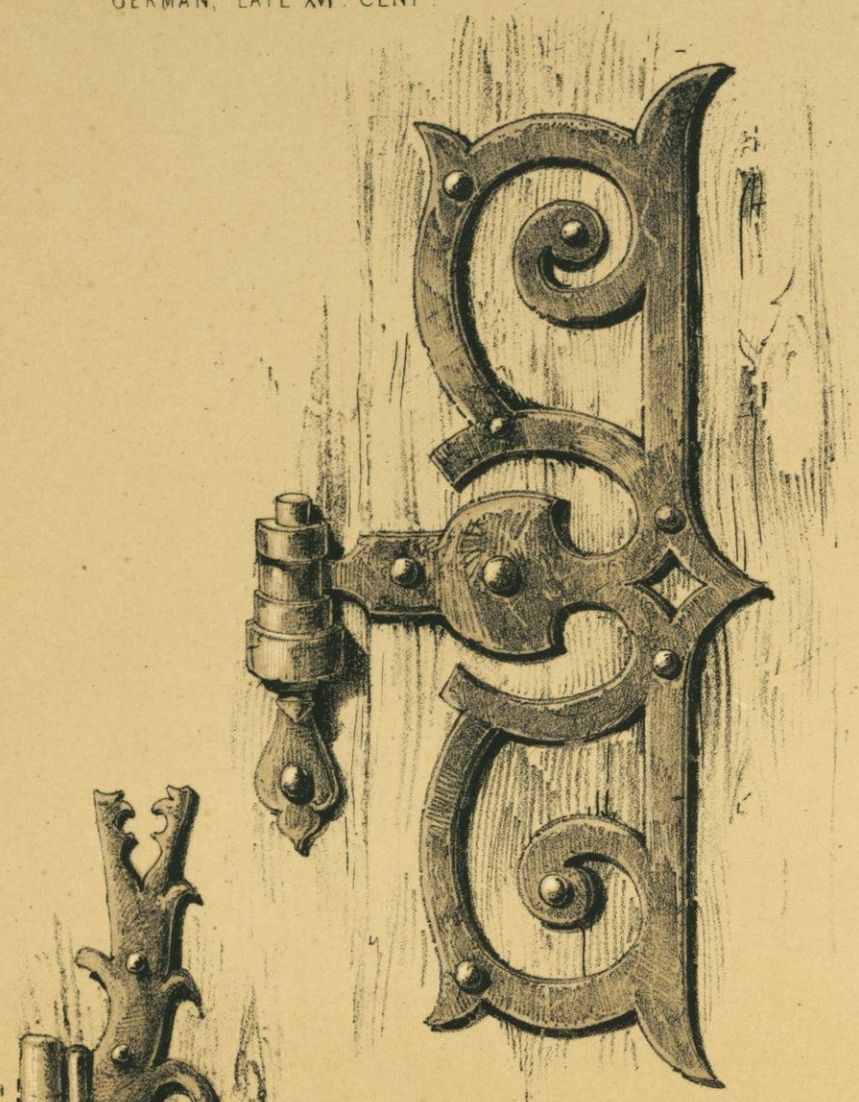
DAY & SON, LITHRS TO THE QUEEN.

F. BEDFORD LITH.

PENDENT LAMPS.

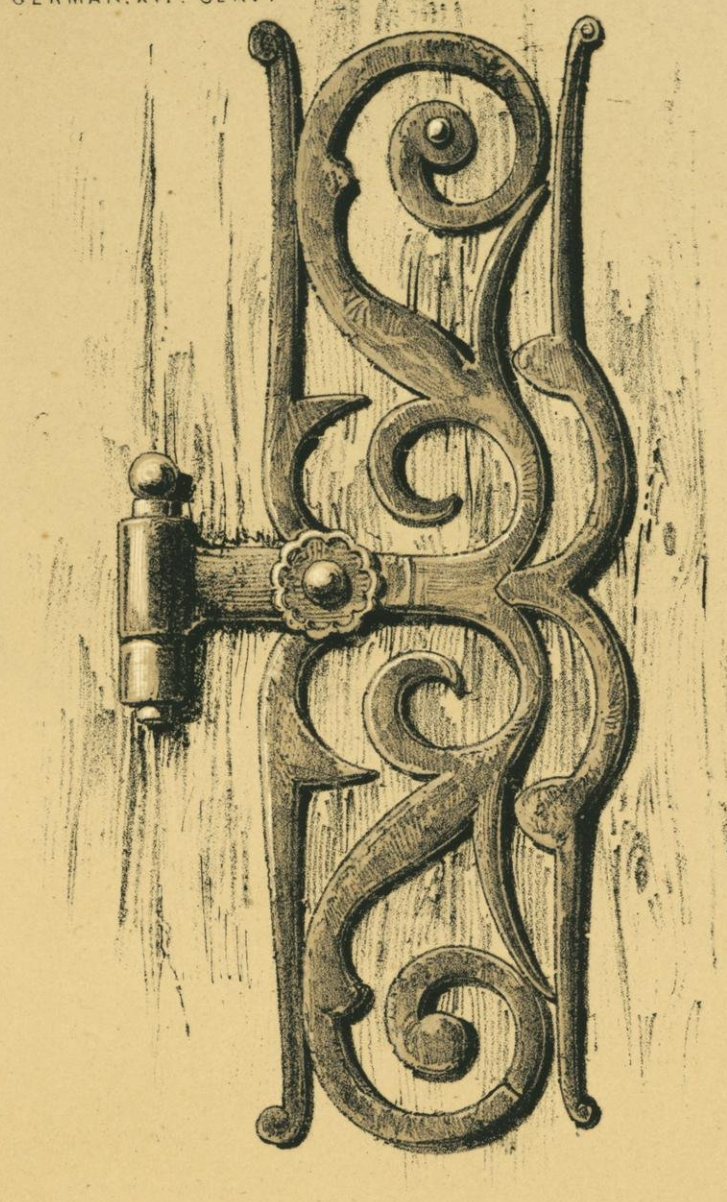
FIG. 1. FROM THE CHURCH OF S. DOMINICO. PERUGIA. — FIG. 2. IN THE CHOIR AISLE, ST. SEBALD'S CHURCH. NUREMBERG. — FIG. 3. FROM THE CHURCH OF STMARIA DEL POPULO. ROME. — FIG. 4. FROM STMARK'S. VENICE.

GERMAN. LATE XVITH CENT^Y



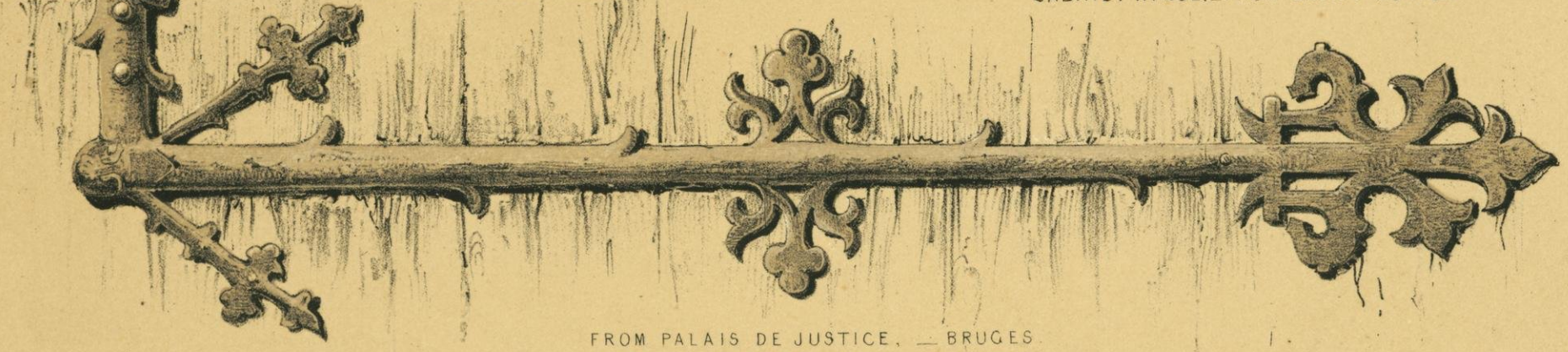
CABINET HINGE.—FROM COLOGNE.

GERMAN. XVITH CENT^Y



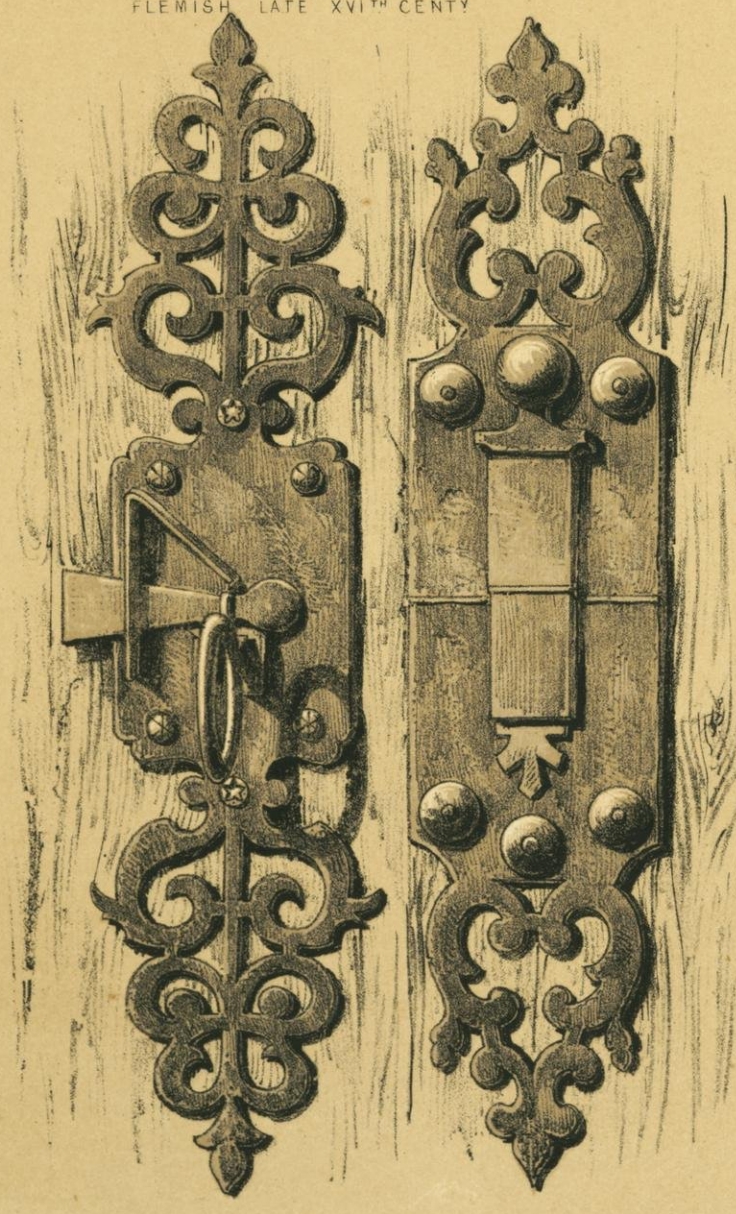
CABINET HINGE.—FROM CATH^L MUNICH.

FLEMISH. A.D. MCCCCLXXX.

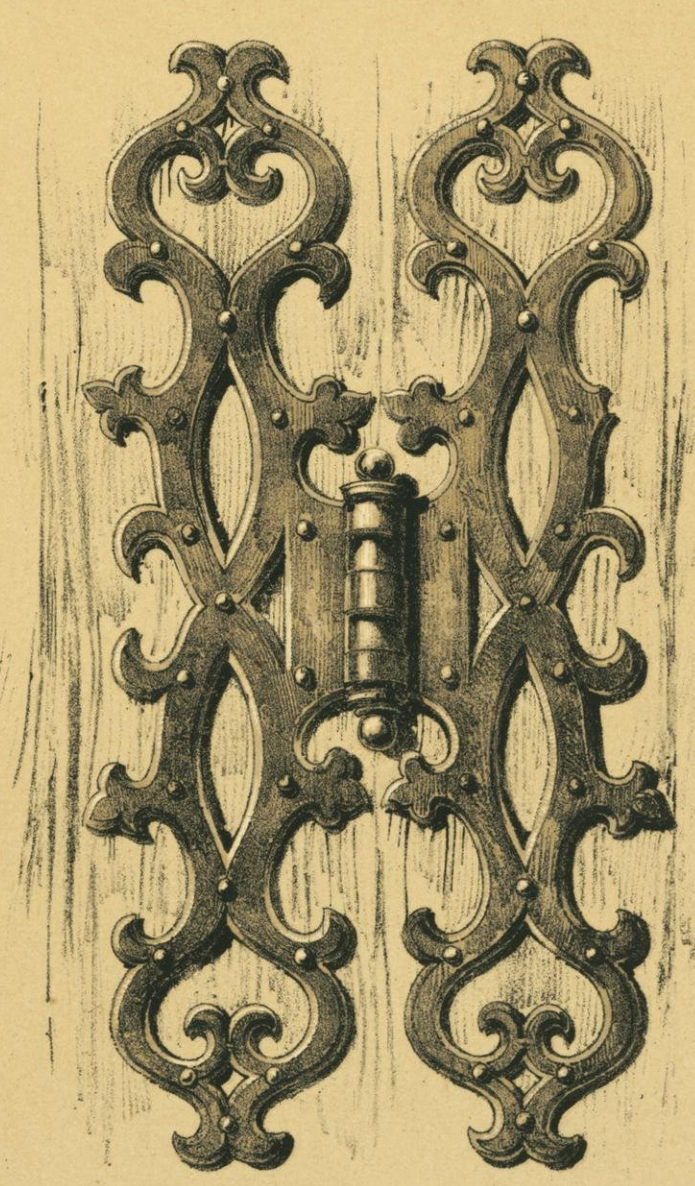


FROM PALAIS DE JUSTICE, —BRUGES.

FLEMISH LATE XVITH CENT^Y



IN PRIVATE POSSESSION.



IN PRIVATE POSSESSION..

E. WILLSON, DEL.

M. DIGBY WYATT, DIRXT.

F. BEDFORD, LITH.

DOUBLE RELIQUARY FROM THE TREASURY OF ST MARK. VENICE.

DAY & SON, LITHRS TO THE QUEEN

M. DIGBY WYATT. DEL.

F. BEDFORD. LITH.

GROUP OF OBJECTS ORNAMENTED WITH LIMOGES AND ITALIAN ENAMEL
EXHIBITED AT THE SALISBURY MEETING OF THE ARCHÆOLOGICAL INSTITUTION 1849

DAY & SON, LITHRS TO THE QUEEN.

FIG. 1.

FIG. 2.

ITALIAN, A.D. 1562.

FIG. 3.

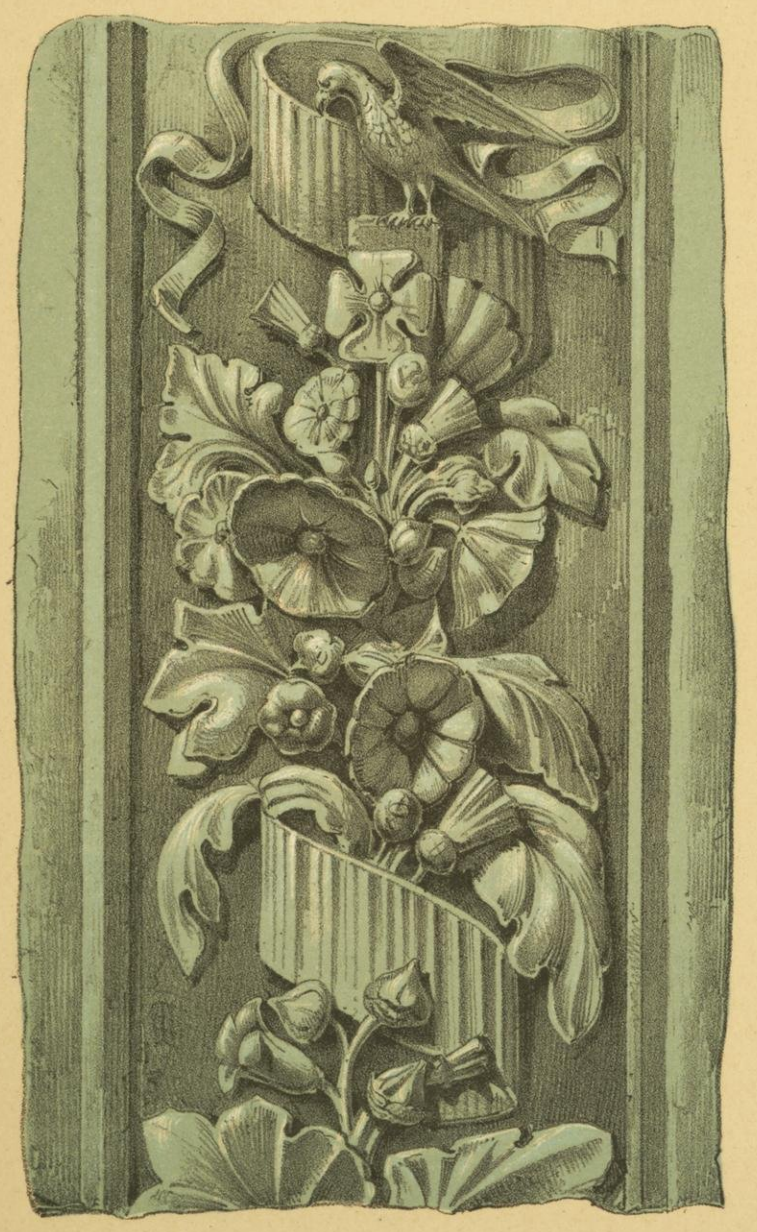
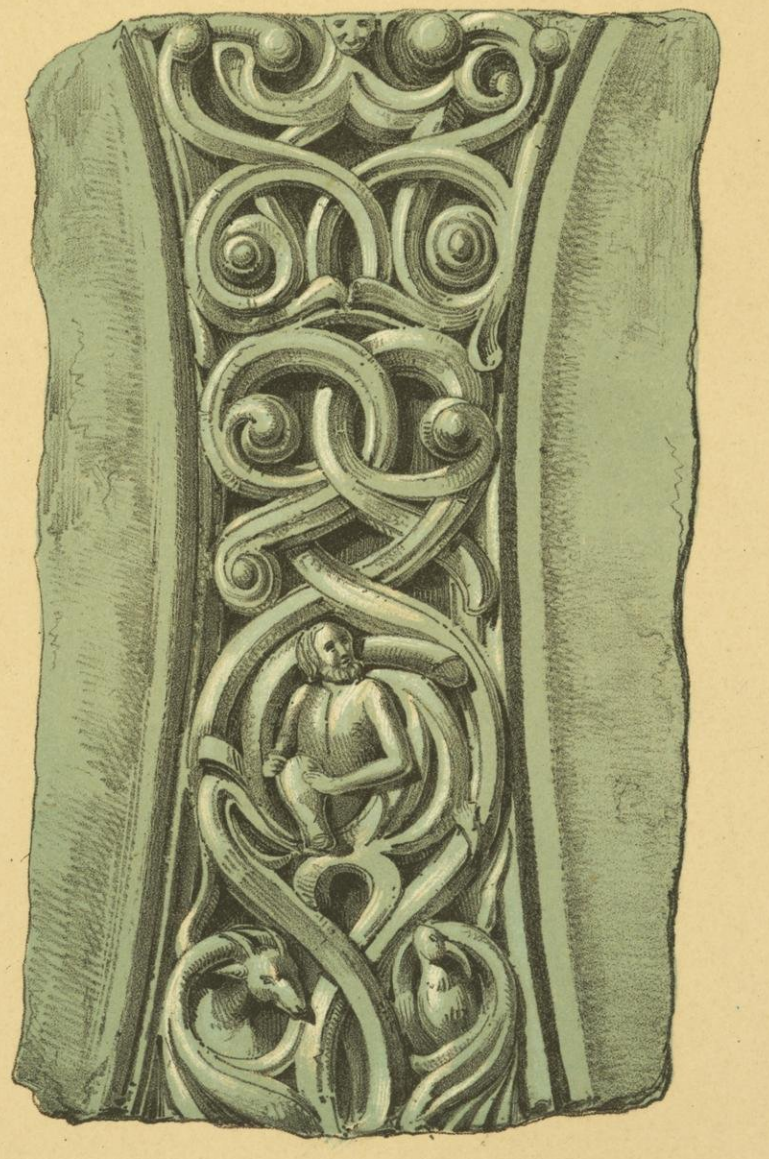


FIG. 4.



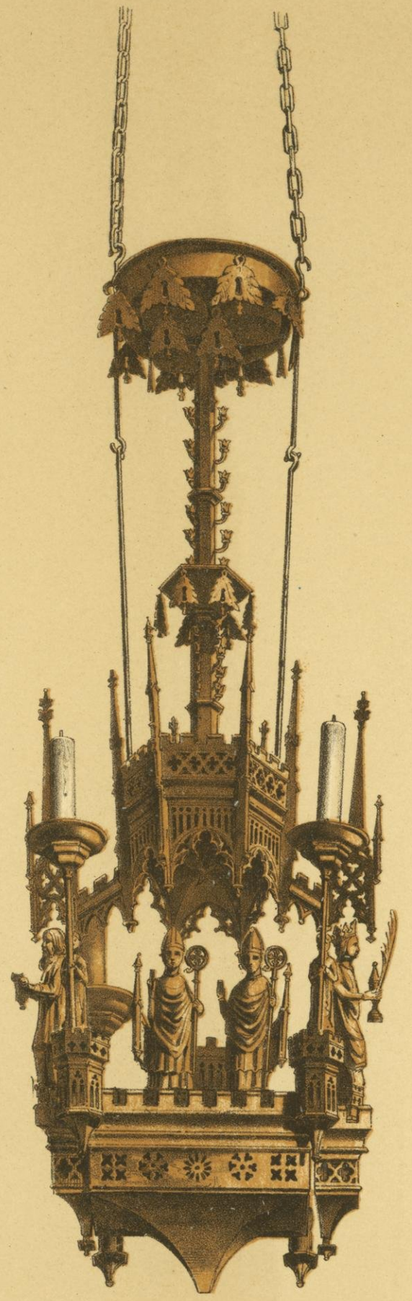
M. DIGBY WYATT DEL.

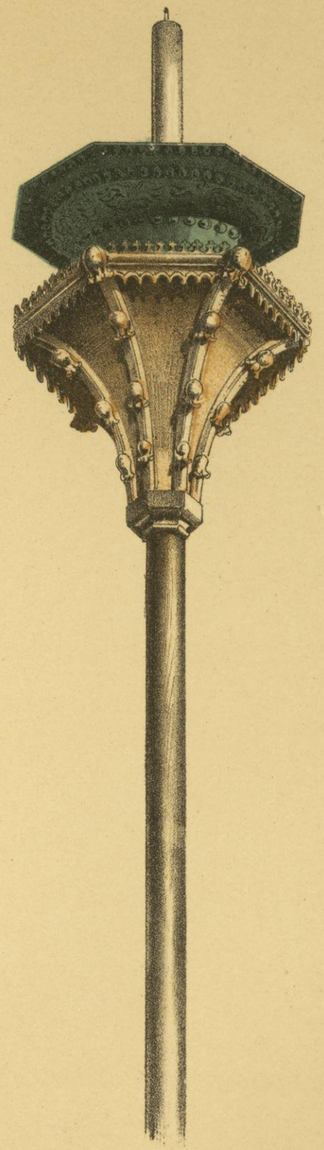
F. BEDFORD, LITH.

FIGS 1. 2. & 3. ORNAMENTS FROM THE BRONZE DOORS (BY GHIBERTI) TO THE BAPTISTERY, FLORENCE

FIG. 4. ORNAMENT FROM A BRONZE CANDELABRUM IN MILAN CATHEDRAL.

DAY & SON, LITHRS TO THE QUEEN.





EDWARD FALKENER, DEL.

M. DIGBY WYATT, DIRT.

F. BEDFORD, LITH.

ONE PROCESSIONAL AND THREE PENDENT LAMPS, FROM THE CATHEDRAL, LUBECK.

DAY & SON, LITHRS TO THE QUEEN.

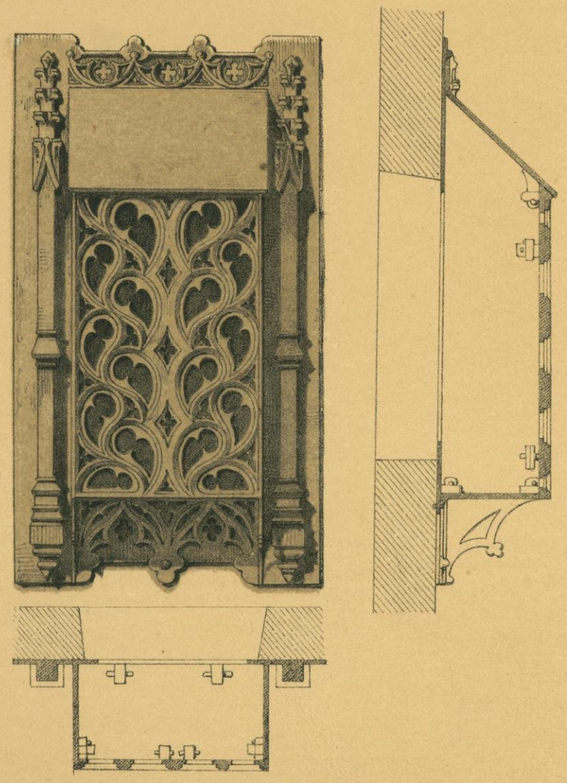
M. DIGBY WYATT. DEL.

F. BEDFORD. LITH.

SILVER GILT RELIQUARY FROM THE TREASURY OF PISTOIA CATHEDRAL.

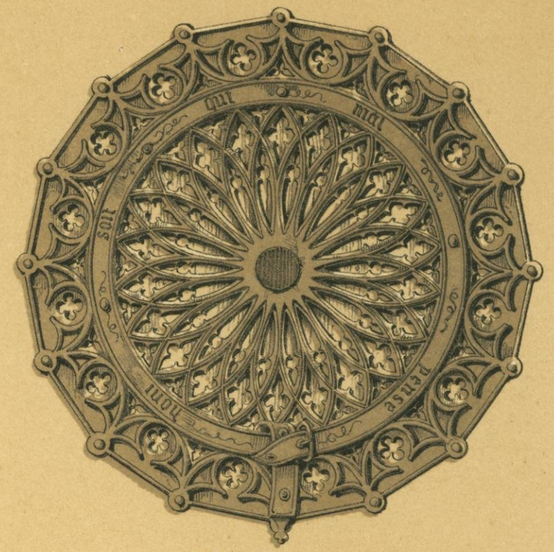
DAY & SON. LITH^RS TO THE QUEEN.

DETAILS OF DOOR FURNITURE from S. GEORGE'S CHAPEL WINDSOR

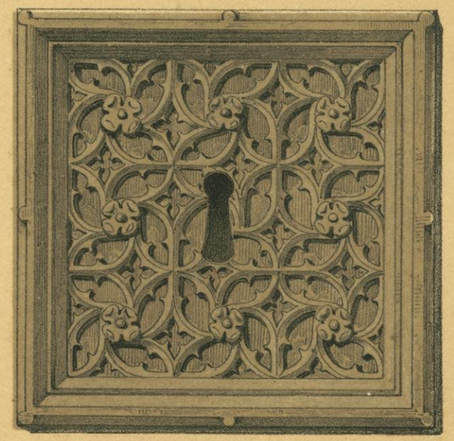


SPECULATORIUM.

ELEVATION OF DOOR.



HANDLE PLATE.



LOCK PLATE.

EDWARD FALKENER. DEL.

M. DIGBY WYATT, DIR.T

F. BEDFORD, LITH.

DAY & SON, LITH.RS TO THE QUEEN.

EDWARD FALKENER, DEL.

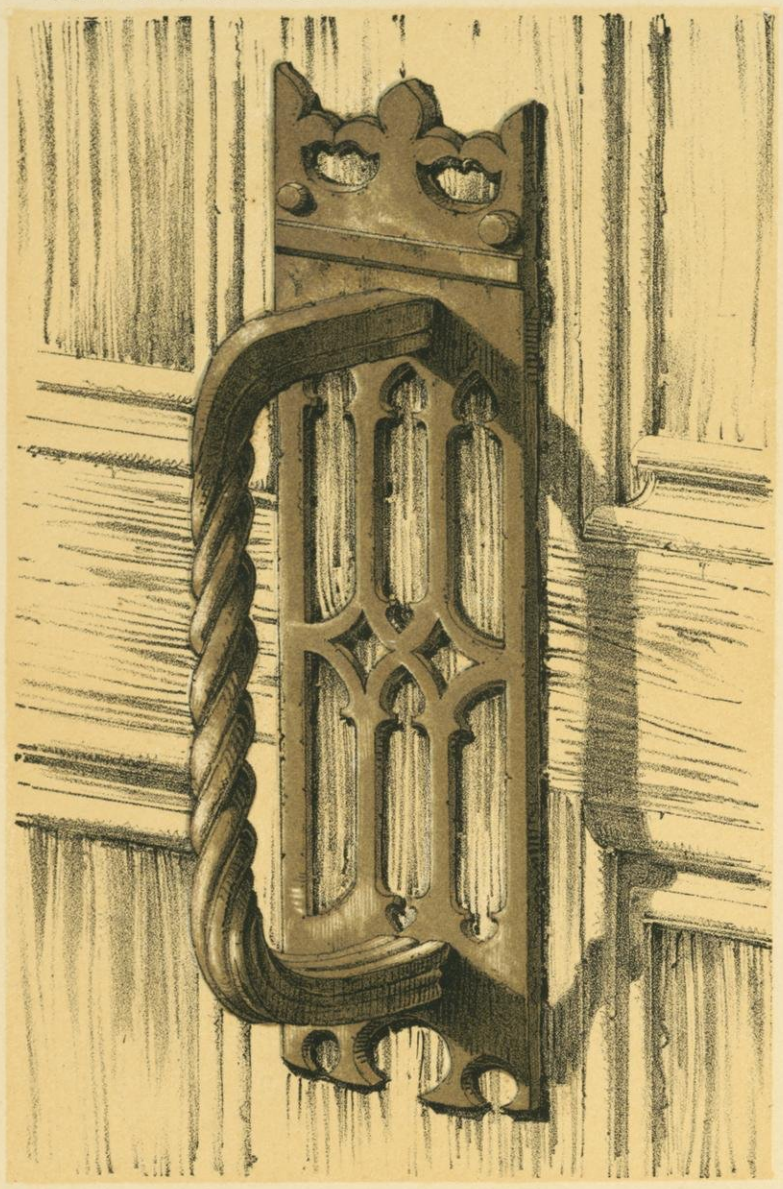
M. DIGBY WYATT, DIR^XT

F. BEDFORD, LITH.

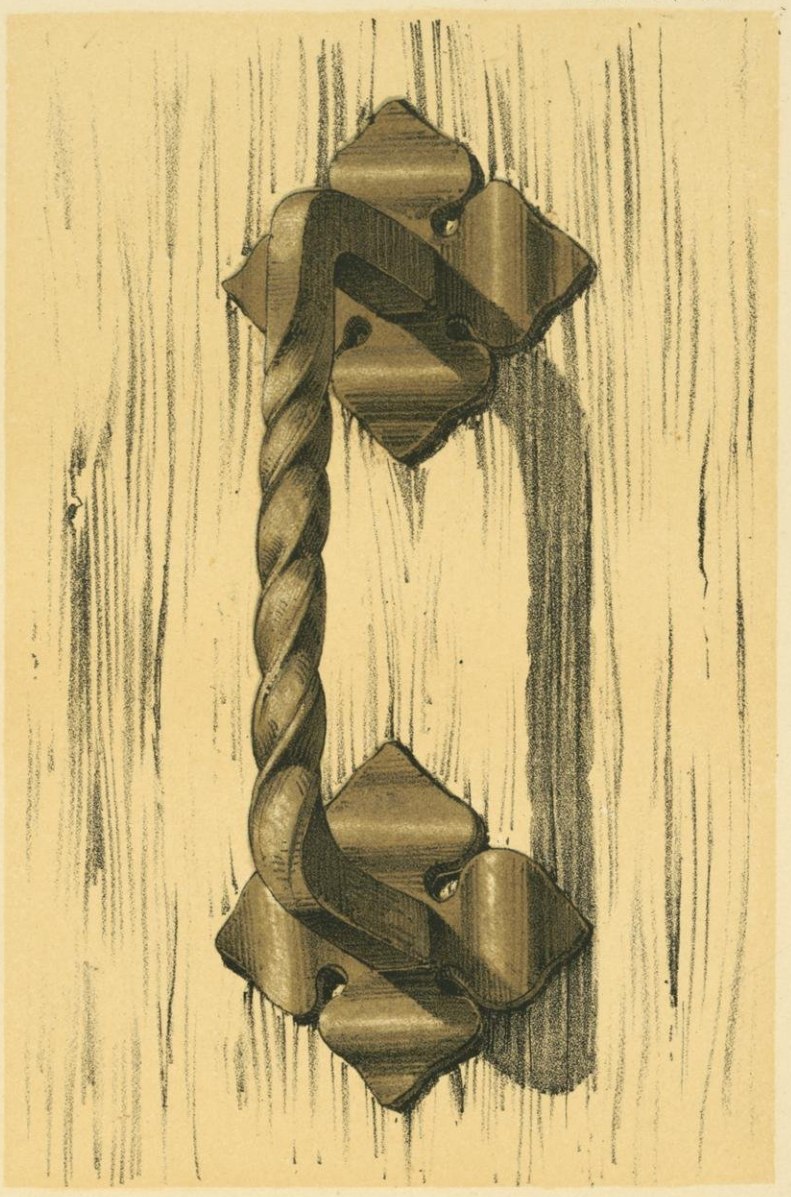
CHALICE AND PATEN, FROM RANDAZZO, IN SICILY.

DAY & SON, LITH^RS TO THE QUEEN.

FLEMISH. XVTH CENTY

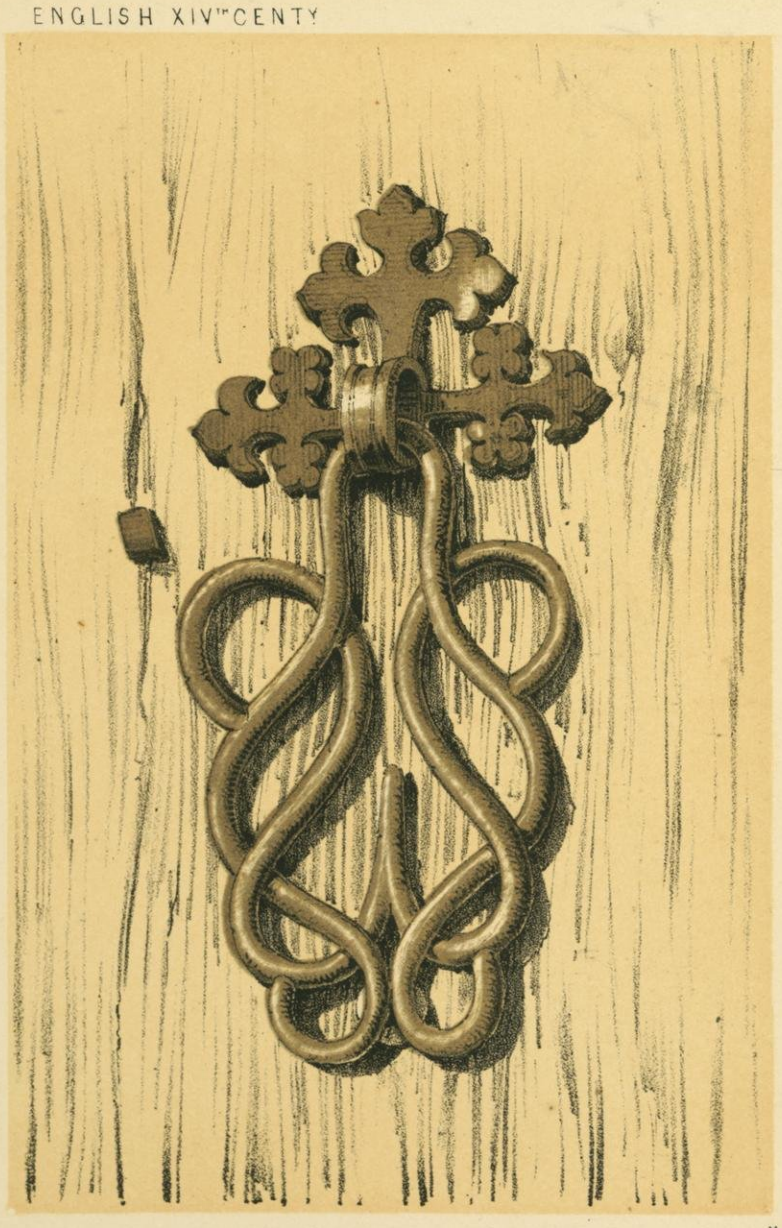


DOOR HANDLE, FROM THE CHURCH OF ST JACQUES. LIEGE.



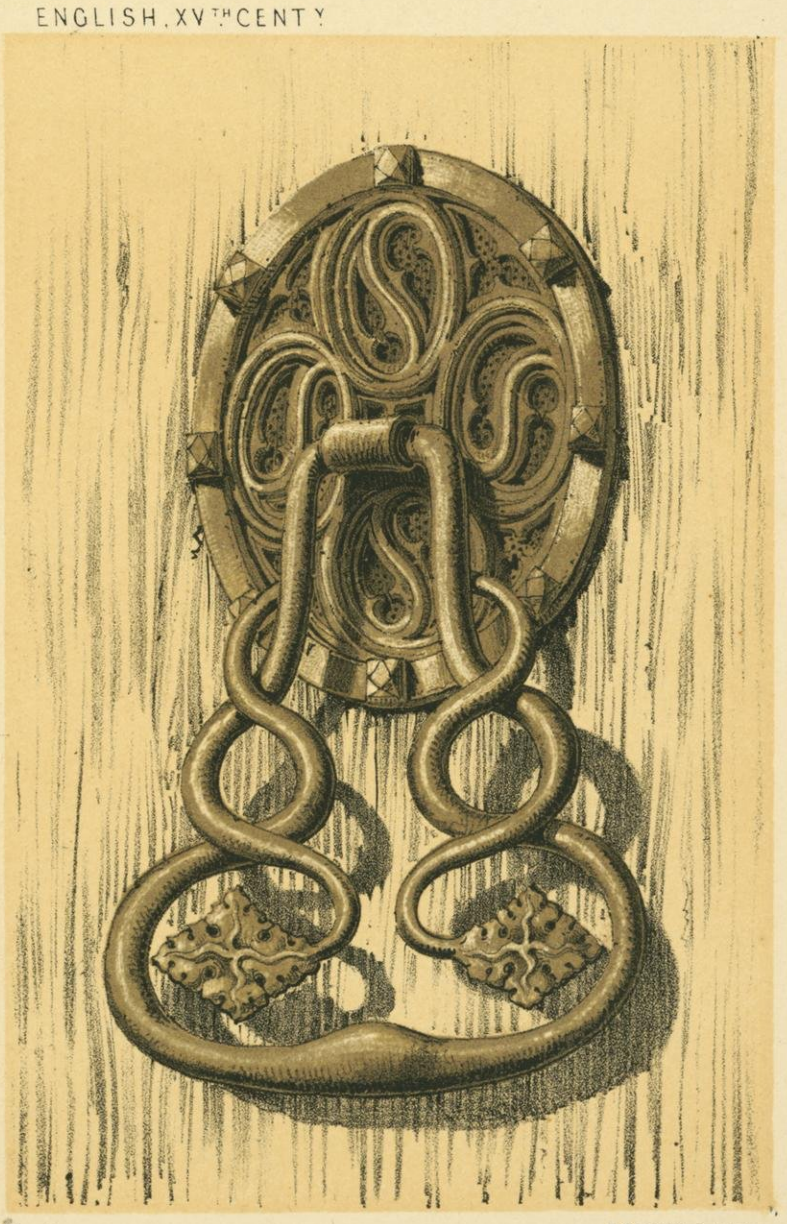
DOOR HANDLE, FROM THE CHURCH OF ST LAWRENCE, NUREMBERG.

ENGLISH XIVTH CENTY



DOOR HANDLE, FROM THE CHURCH OF ST VINCENT. ROUEN.

ENGLISH. XVTH CENTY



DOOR HANDLE FROM THE CHURCH OF ST MARY. BURY ST EDMUNDS.

M. DIGBY WYATT. DIR^T

F. BEDFORD LITH.

DAY & SON, LITH^RS TO THE QUEEN.

EDWARD FALKENER. DEL.

M. DIGBY WYATT, DIREXT

F. BEDFORD. LITH.

CHALICES AND PATENS FROM RANDAZZO, IN SICILY.

DAY & SON, LITHRS TO THE QUEEN

ROMAN, XVII TH CENTURY.

FIG. 1.

CRILLE FROM STA MARIA DEGLI ANGELI_ROME.

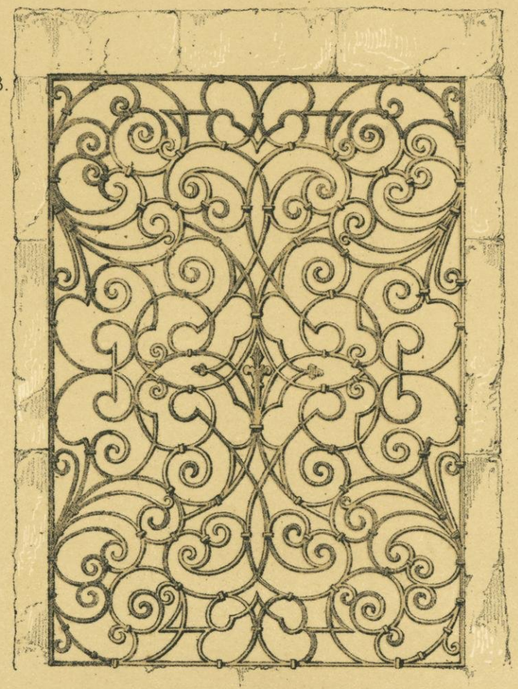
VENETIAN, MODERN.

FIG. 2.

WINDOW CRILLE FROM A PRIVATE HOUSE_VENICE.

VENETIAN, XVIII TH CENTURY.

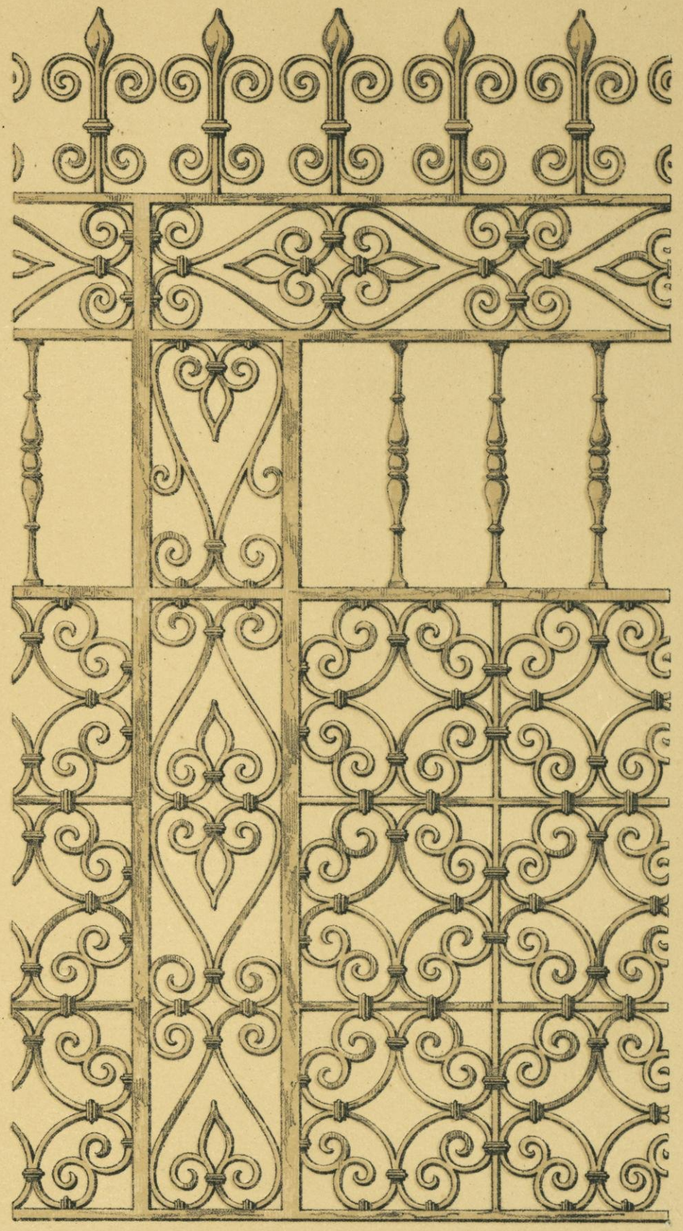
FIG. 3.



WINDOW CRILLE FROM A PRIVATE HOUSE_VENICE.

SICILIAN, XVI TH CENTURY

FIG. 4.

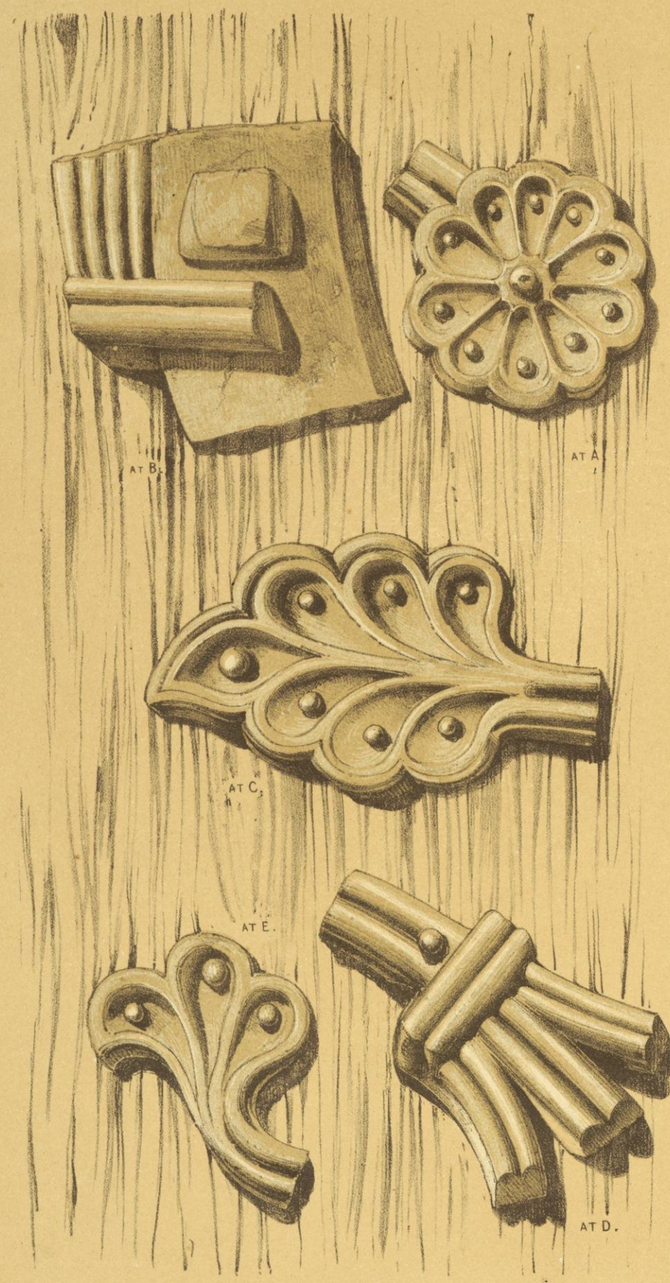


CRILLE SURROUNDING THE TOMB OF KING ROGER IN THE CATHEDRAL_PALERMO.

M. D. WYATT, DELT

Day & Son, Lith^rs to The Queen.

F. BEDFORD, LITH.



DETAILS OF FIG. 1.

FIG. 1.

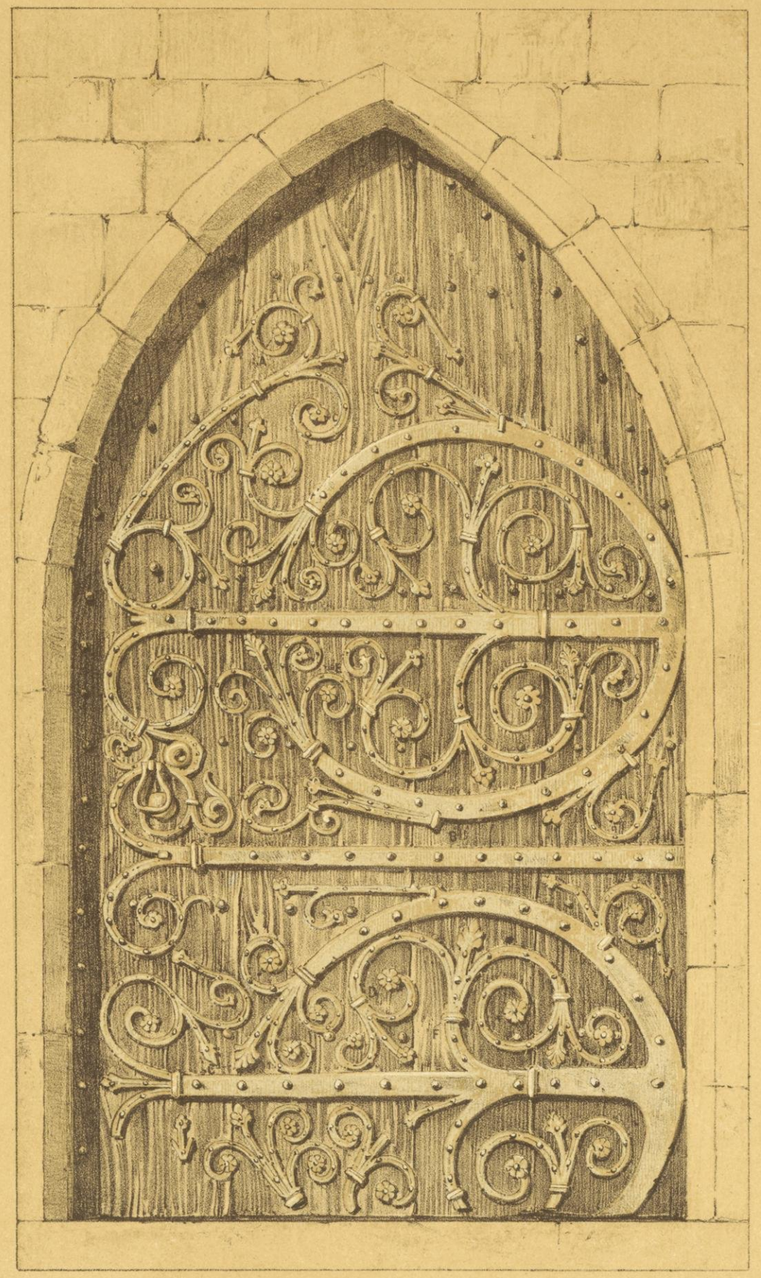
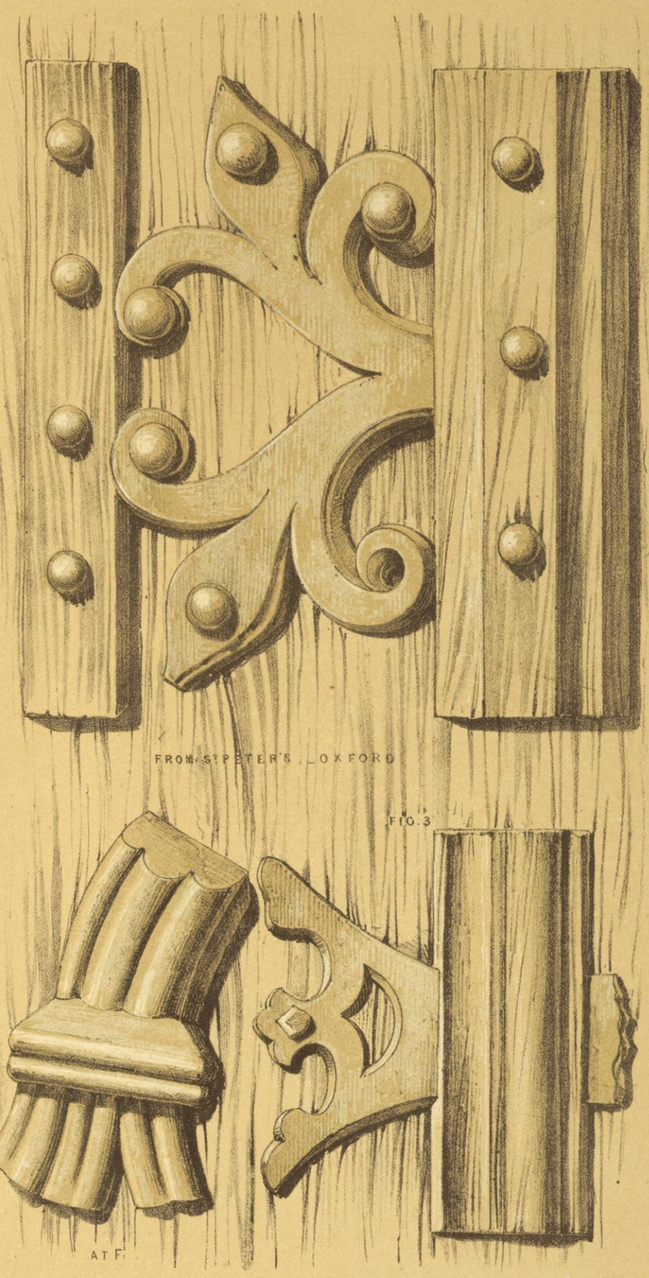


FIG. 2



FROM S^T PETER'S._OXFORD.

FIG. 3

FROM S^T MARIE'S._OXFORD.

W. BURGES. DEL.

M. DIGBY WYATT, DIRX^T.

F. BEDFORD LITH.

DOORWAY OF HALL._MERTON COLLEGE._OXFORD.

DAY & SON LITH^RS TO THE QUEEN.

FIG. 1.

DETAIL OF EMBLEM OF ST JOHN.
AT A.

FIG. 5.

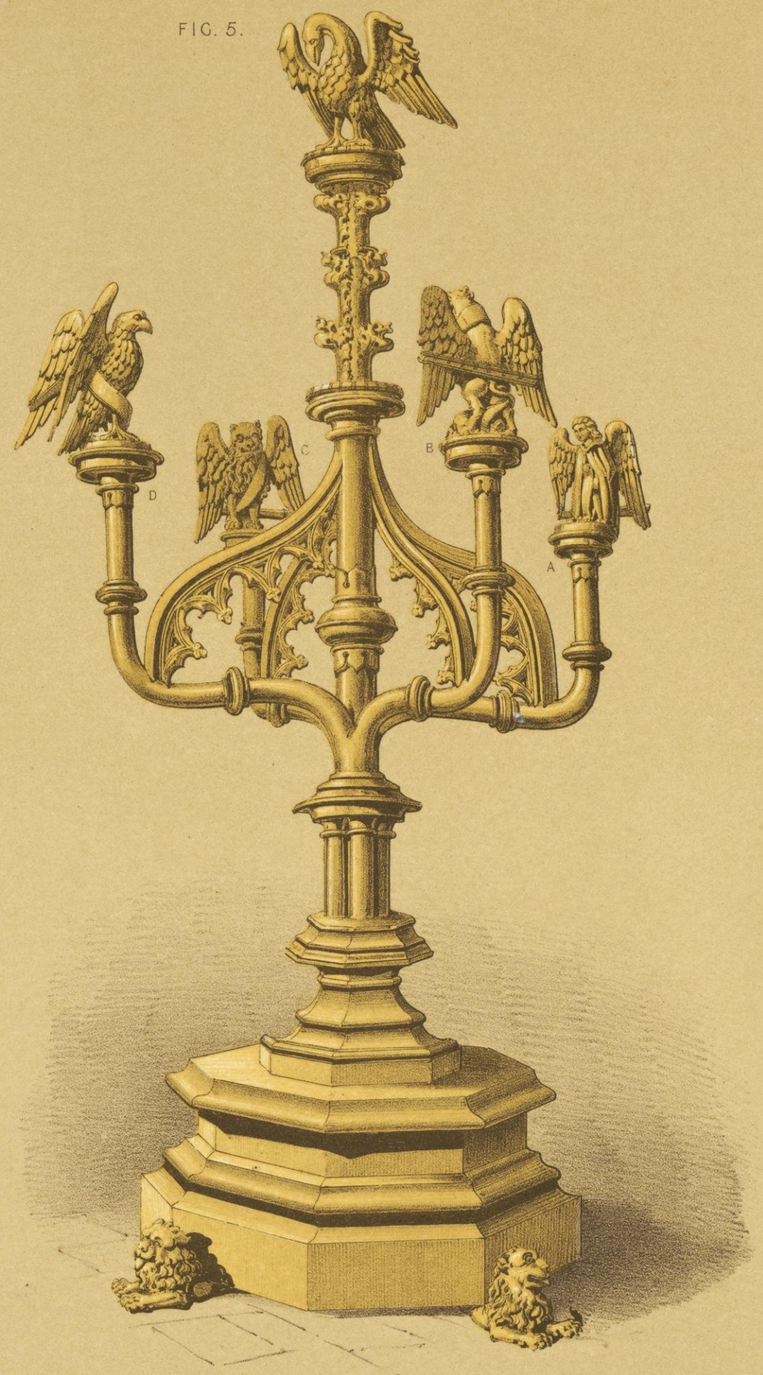


FIG. 3.

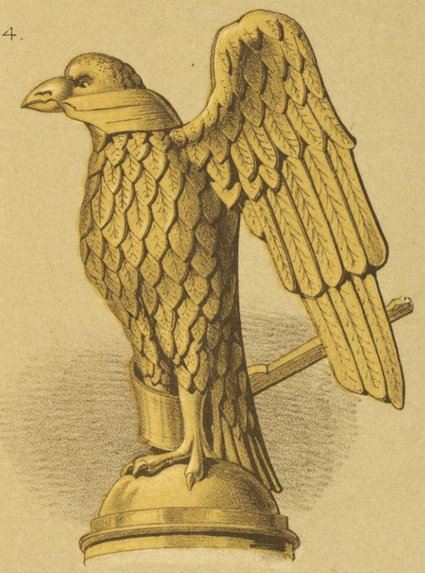
DETAIL OF EMBLEM OF ST MARK,
AT C.

FIG. 2.

DETAIL OF EMBLEM OF ST LUKE,
AT B.

LECTURN IN THE CATHEDRAL AT MESSINA, THE DESKS REVOLVE SO THAT EACH GOSPEL IS READ FROM ITS PROPER EMBLEM.

FIG. 4.



DETAIL OF EMBLEM OF ST MATTHEW.
AT D.

M.D.WYATT DEL.

Day&Son, lith^rs to The Queen.

F. BEDFORD, LITH.

M. DIGBY WYATT, DIREXT. F. BEDFORD, LITH.

HANAPS, WIEDERKOMS, TANKARDS &c. IN THE POSSESSION OF MESSRS R & S. GARRARD OF LONDON.

DAY & SON, LITHRS TO THE QUEEN.

ENGLISH, PROBABLY XVIITH CENT^RY.

FIG. 1.

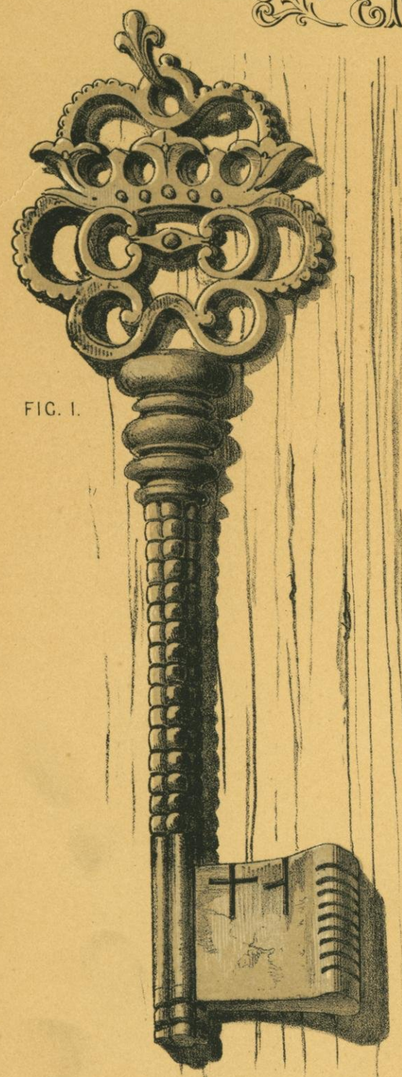


FIG. 2.

LOCK & KEY, FORMERLY BELONGING TO AN OLD HOUSE AT WILTON.

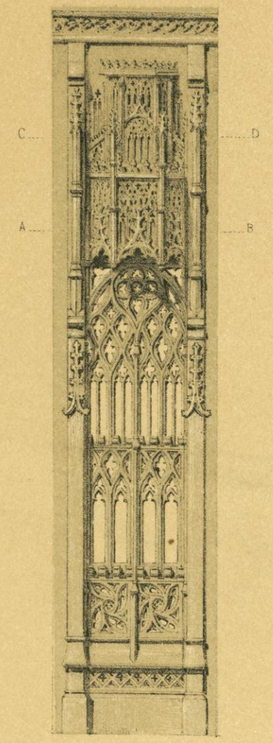
E. A. SPURR, DELT

M. D. WYATT, DIR^XIT

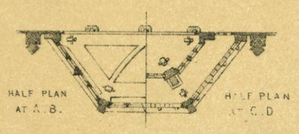
F. BEDFORD, LITH.

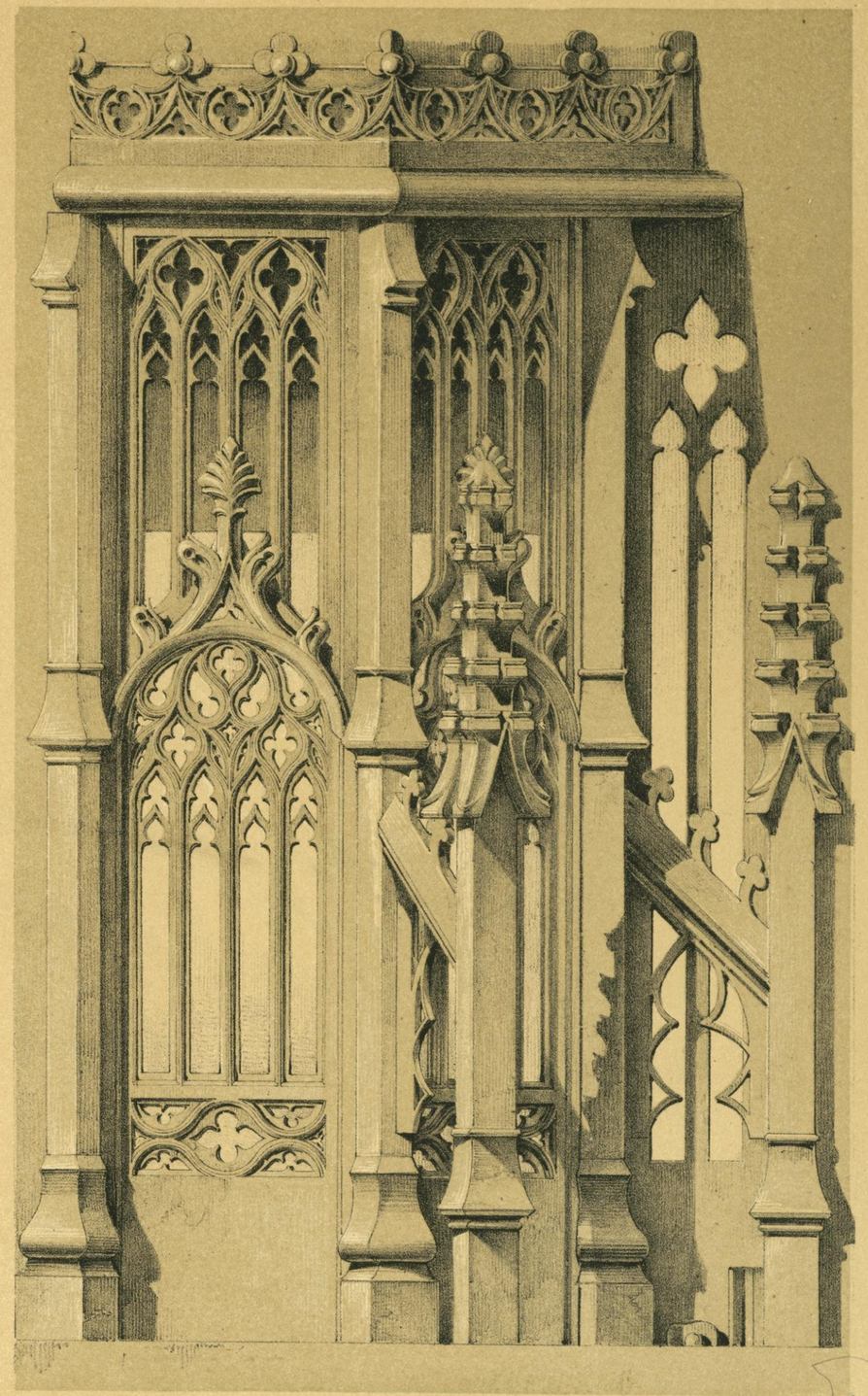
Day & Son, Lith^rs to The Queen

PARAPET.



ELEVATION OF ONE COMPARTMENT.





W. BURGESS, DEL.

ELEVATION OF ONE COMPARTMENT OF LOWER DIVISION OF CANOPY.
FULL SIZE.

M. DIGBY WYATT DIREX^T

SCREEN FROM EDWARD V^TH'S TOMB AT WINDSOR

F. BEDFORD, LITH.

PART OF UPPER DIVISION OF CANOPY.
FULL SIZE.

FIG. 1

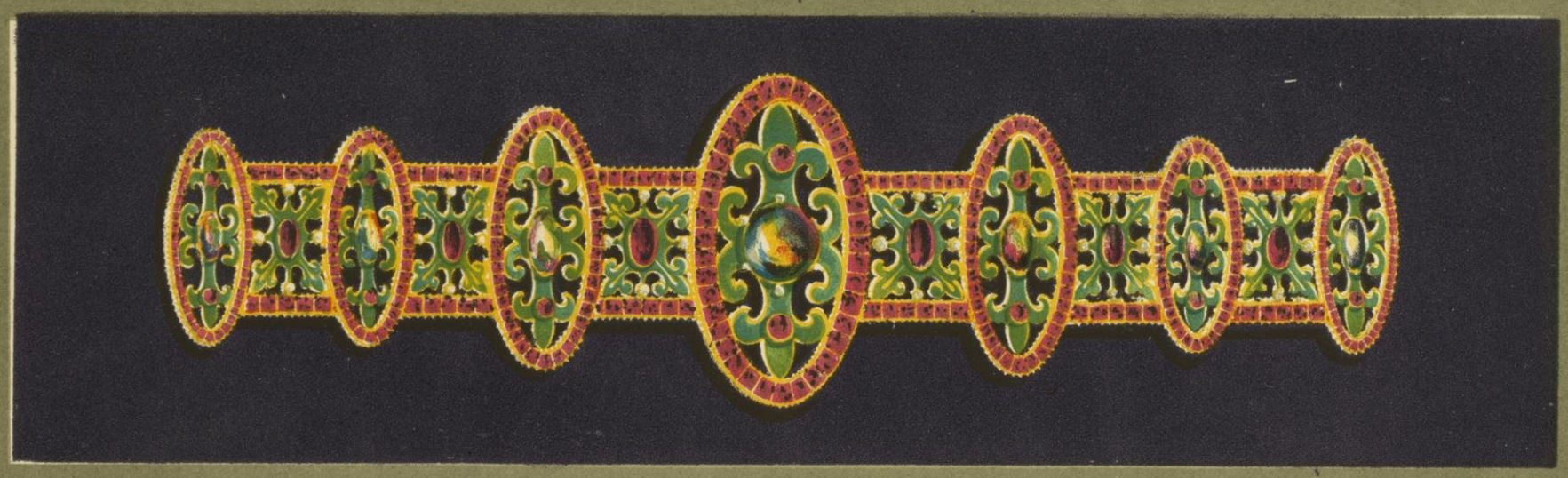


FIG. 2

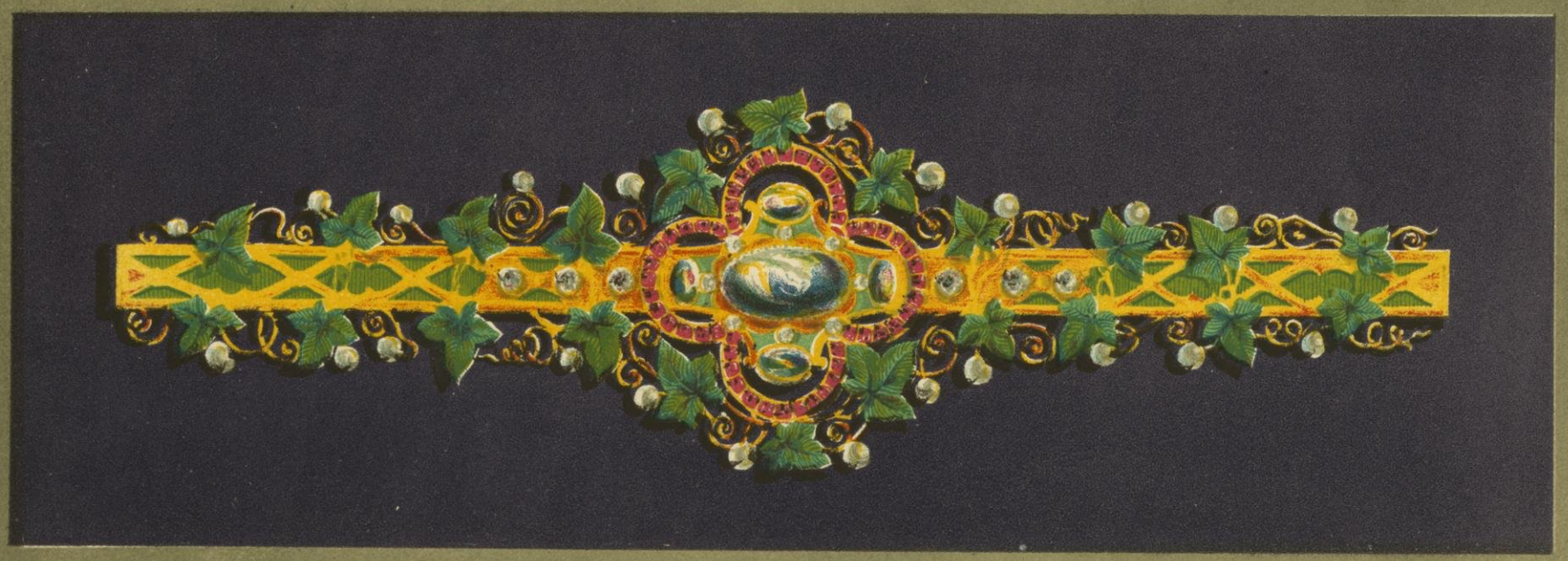
FIG. 3.

FIG. 4

FIG. 5.

FIG. 6.

FIG. 7.



P.H. DELAMOTTE, DEL.

F. BEDFORD, LITH.

SPECIMENS OF REVIVED CINQUE CENTO JEWELLERY, CONTRIBUTED TO THE EXHIBITION OF 1851, BY FROMENT MEURICE OF PARIS.

DAY & SON, LITHRS TO THE QUEEN.

M. DIGBY WYATT, DEL.

F. BEDFORD, LITH.

CHALICE BROUGHT FROM LA MARCA, IN THE POSSESSION OF THE MARQUIS OF DOUGLAS.

DAY & SON LITH^RS TO THE QUEEN

F. BEDFORD, LITH.

M. DIGBY WYATT, DIRECT.

WROUGHT-IRON GATES OF THE CLARENDON PRINTING-OFFICE, OXFORD.

DAY & SON, LITHRS TO THE QUEEN

EDWARD FALKENER DEL. M. DIGBY WYATT, DIREXT. F. BEDFORD, LITH.

PARCEL GILT CHALICE, FROM RANDOZZO, SICILY

DAY & SON, LITHRS TO THE QUEEN.

J. JOHNSON, DEL. M. DIGBY WYATT, DIREXT. F. BEDFOFORD, LITH.

VENETIAN DRINKING CUP, IN PRIVATE POSSESSION.

DAY & SON, LITHRS TO THE QUEEN.

FIG. 1.

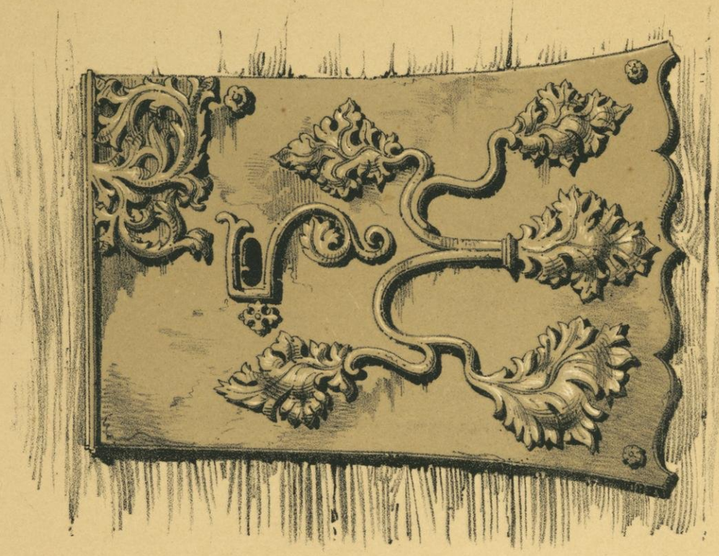


FIG. 2.

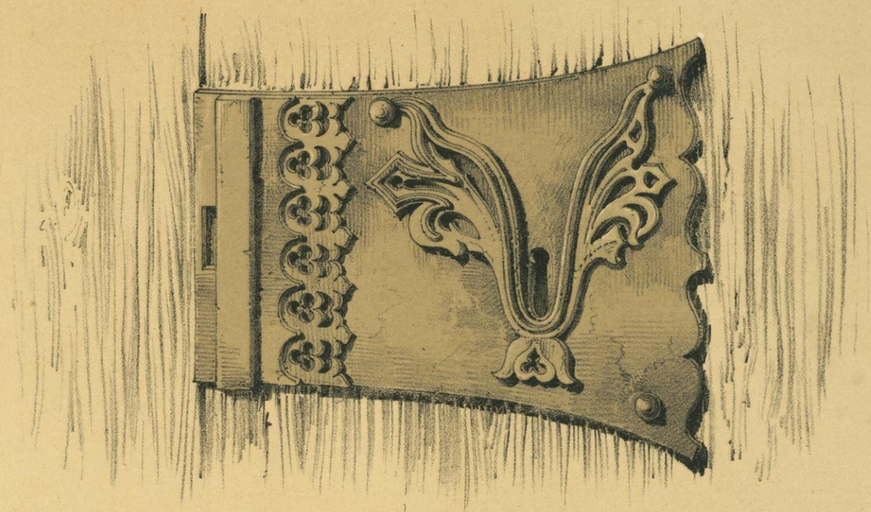
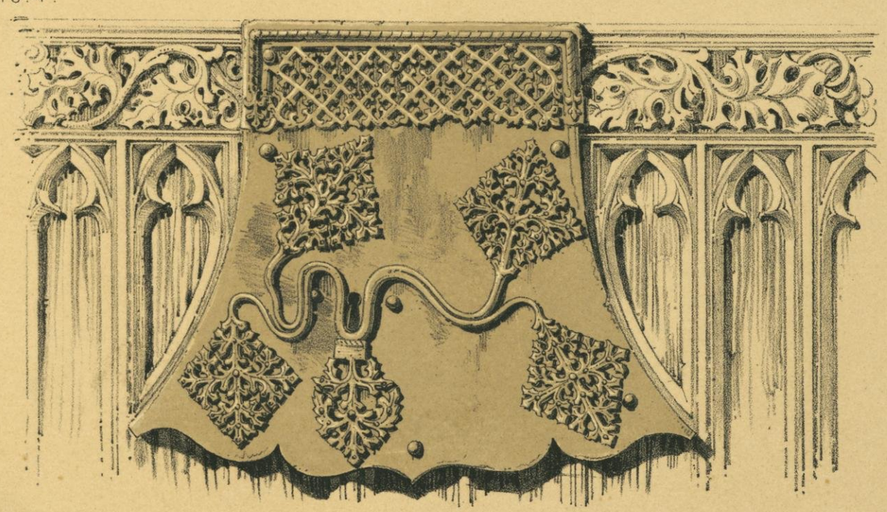


FIG. 3.

FIG. 4.



M. DIGBY WYATT, DIRXT

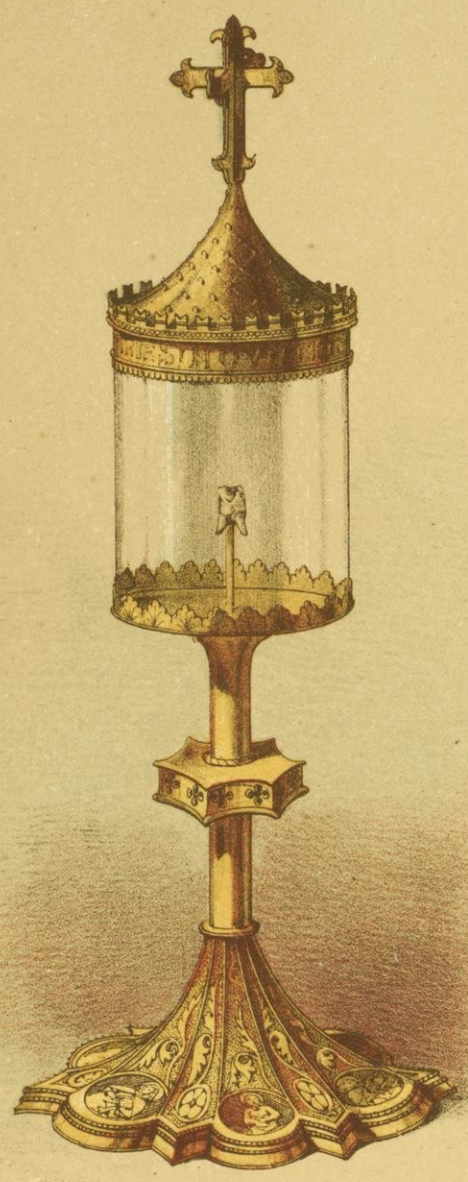
F. BEDFORD, LITH.

LOCKS, FROM NUREMBERG. PROBABLY OF THE END OF THE XV TH CENTY.

DAY & SON, LITHRS TO THE QUEEN.

VENETIAN. XIVTH CENTY

FIG. 1.



VENETIAN. XVTH CENTY

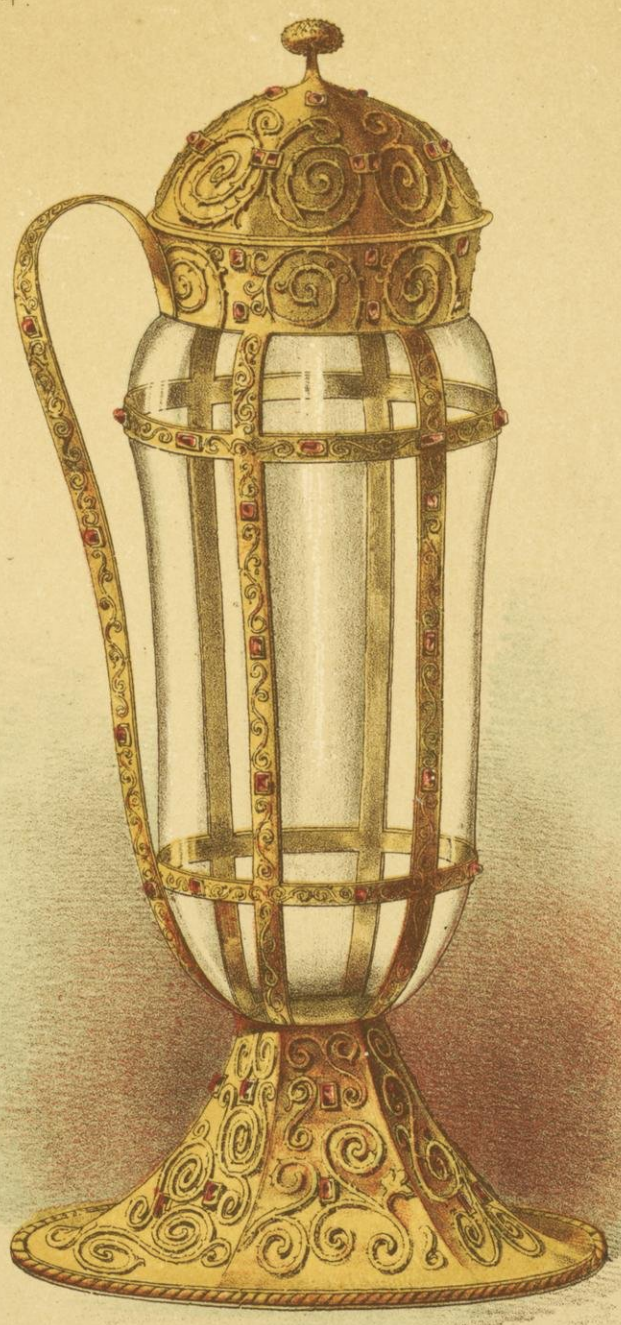
FIG. 2.

VENETIAN. XIVTH CENTY

FIG. 3.

VENETIAN. XIIITH CENTY

FIG. 4.



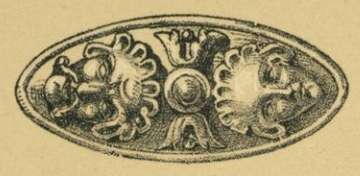
E. WILLSON, DEL.

N. DIGBY WYATT DIREXT

F. BEDFORD, LITH.

FIGS. 1. AND 2. RELIQUARIES — FIG. 3 A PIX. FIG. 4 A CRYSTAL VASE.
ALL FROM THE TREASURY OF S^T MARK, VENICE.

DAY & SON, LITH^RS TO THE QUEEN



POMMEL OF THE DAGGER.

FROM A CINQUE CENTO DAGGER.
(IN PRIVATE POSSESSION.)

COIN BY BENVENUTO CELLINI
(SAINTS COSMO AND DAMIAN.)

PORTION OF THE PILASTERS OF THE MADELEINE, PARIS.

COIN, BY BENVENUTO CELLINI.

FROM A CINQUE CENTO DAGGER.
(IN PRIVATE POSSESSION.)

COIN BY BENVENUTO CELLINI.
OBVERSE - HEAD OF ALESSANDRO DI MEDICI.

M. DIGBY WYATT, DIREXT.

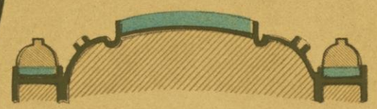
F. BEDFORD, LITH.

CHALICE IN SILVER GILT FROM THE TREASURY
OF THE CATHEDRAL. PISTORIA.

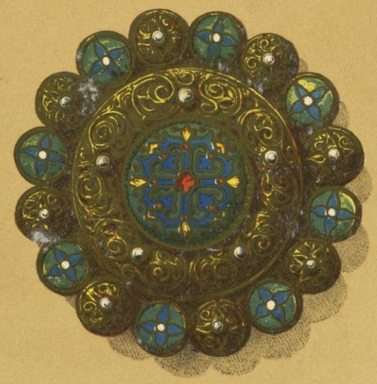
DAY & SON, LITHRS TO THE QUEEN.

MORSE, OR BROOCH IN THE TRESOR OF THE CHURCH OF ST URSULA, COLOGNE.

A PORTION OF THE SCABBARD OF THE ARCHIEPISCOPAL SWORD OF STATE IN THE TRESOR OF THE CATHEDRAL OF COLOGNE.



SECTION OF THE BROOCH BENEATH.



BROOCH IN FILAGREE ENAMEL, PRESERVED AMONG THE HAMILTON GEMS IN THE BRITISH MUSEUM.

SPECIMENS OF ITALIAN ENAMELLING, COLLECTED FROM THE PRECIOUS ALTAR FRONTAL OF SAN GIACOMO DI PISTOIA.

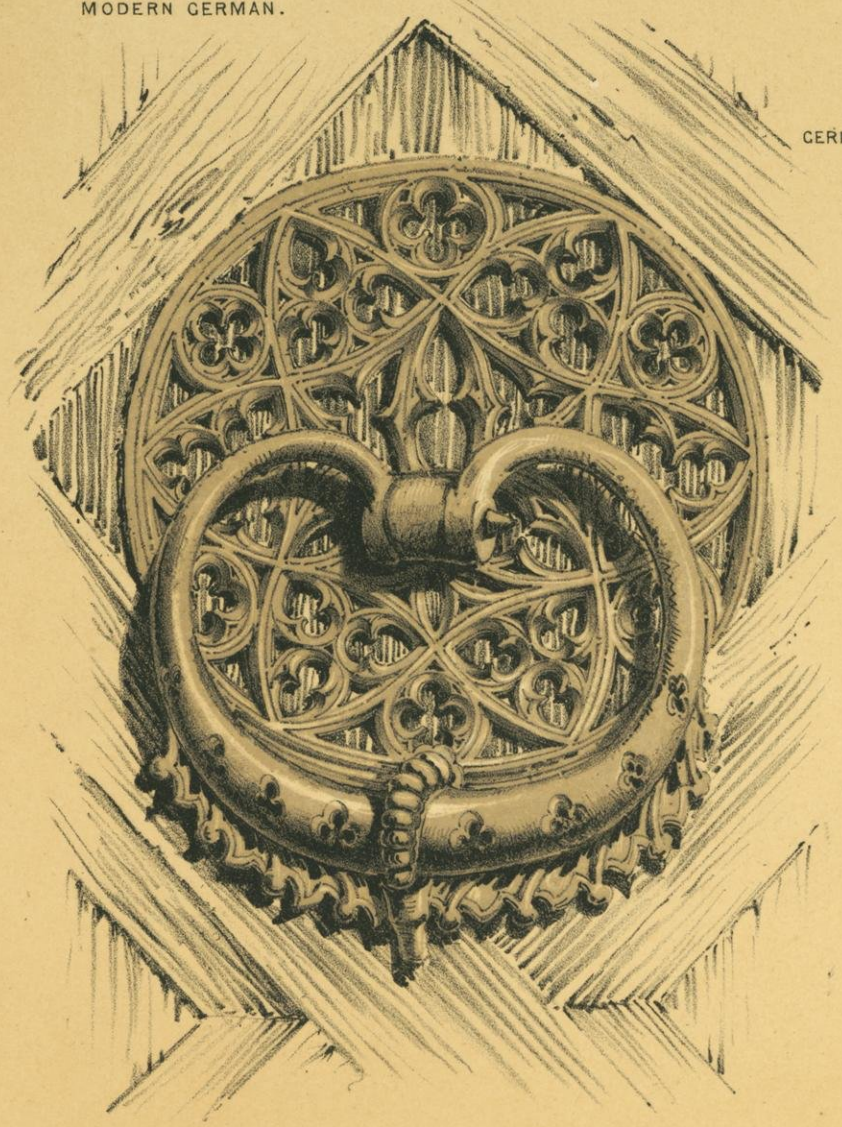
W. BURGES, DEL.

DAY & SON, LITHRS TO THE QUEEN.

F. BEDFORD, LITH.

FIG. 1.

MODERN GERMAN.



DOOR HANDLE IN IRON,
MODERN (HEIDELOFF) AÛ KIRCHE — MUNICH.

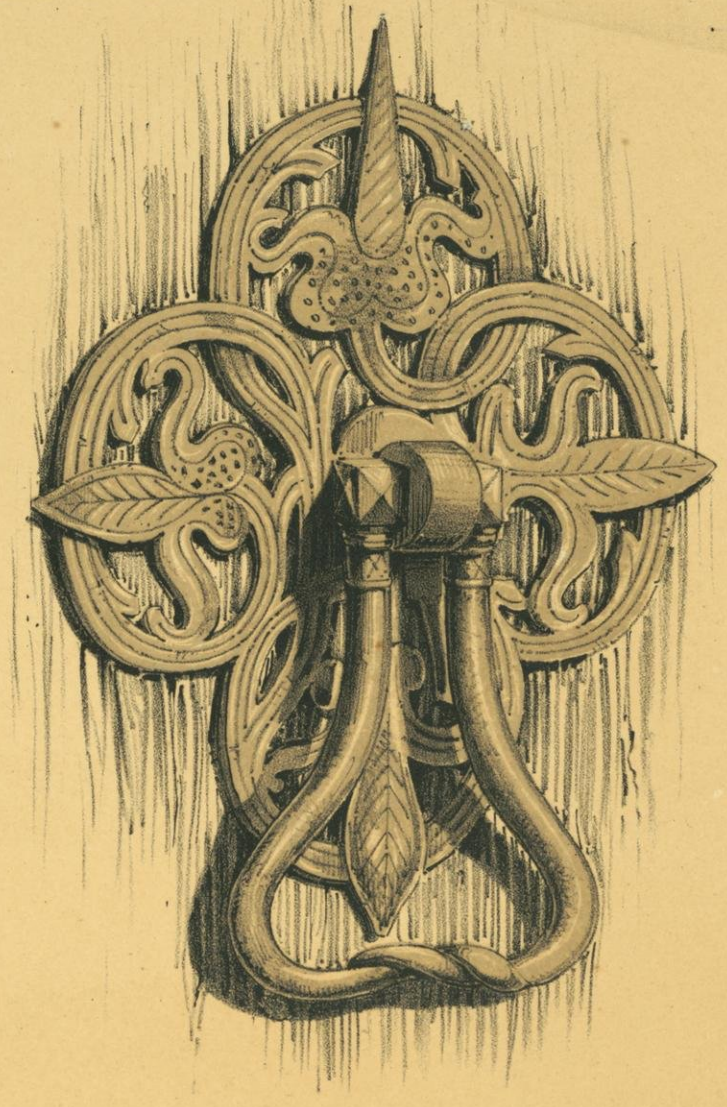
FIG. 2.

GERMAN XVTH CENTY

FROM FONT BRACKET,
LOUVAIN CATHL.

FIG. 3.

GERMAN XVTH CENTY



FROM INNSPRUCK — TYROL.

DEVELOPMENT
OF LEAF OF FINIAL.

ITALIAN XVIITH CENTY

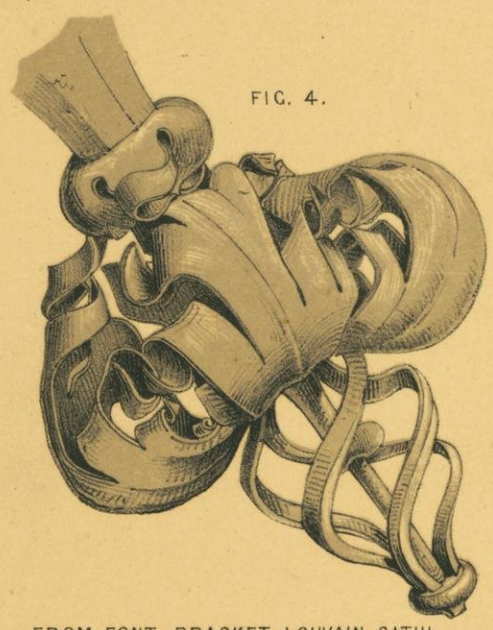
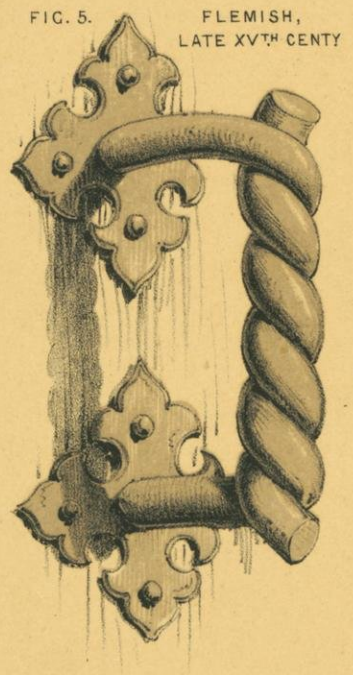


FIG. 4.

FROM FONT BRACKET LOUVAIN CATHL

FIG. 5. FLEMISH,
LATE XVTH CENTY



FROM BRUSSELS.

FIG. 6.

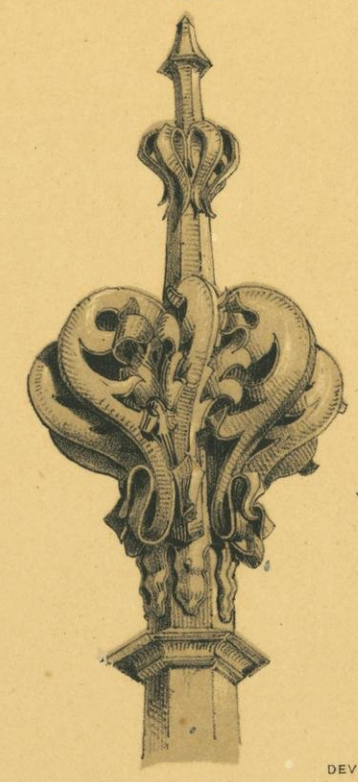
FROM FONT BRACKET LOUVAIN CATHL

DEVELOPMENT OF CROCKET.

FIG. 7.

DOOR HANDLE, FROM FLORENCE.

FIG. 8.



FINIAL,
FROM FONT BRACKET LOUVAIN CATHL

DEVELOPMENT OF LEAF
OF FINIAL

ITALIAN XVIITH CENTY

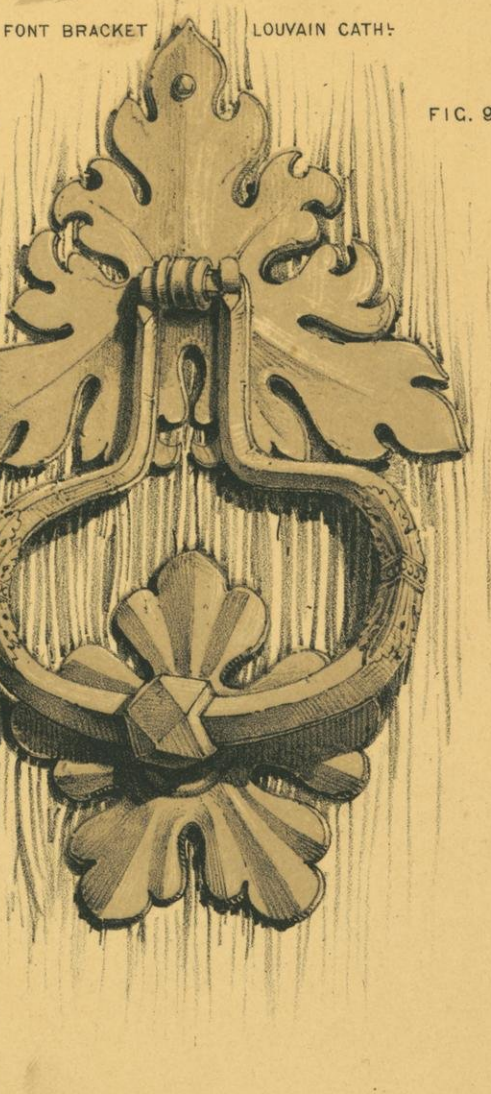


FIG. 9.

DOOR HANDLE, FROM BRESCIA.

W. BURGES, AND M. DIGBY WYATT, DEL.

F. BEDFORD, LITH

ENAMELLED CHALICE AND PATEN FROM THE TREASURY OF MAYENCE CATHEDRAL.
COPY OF THE GOSPELS, THURIBLE_AMPOLLÆ_MONSTRANCE &c.

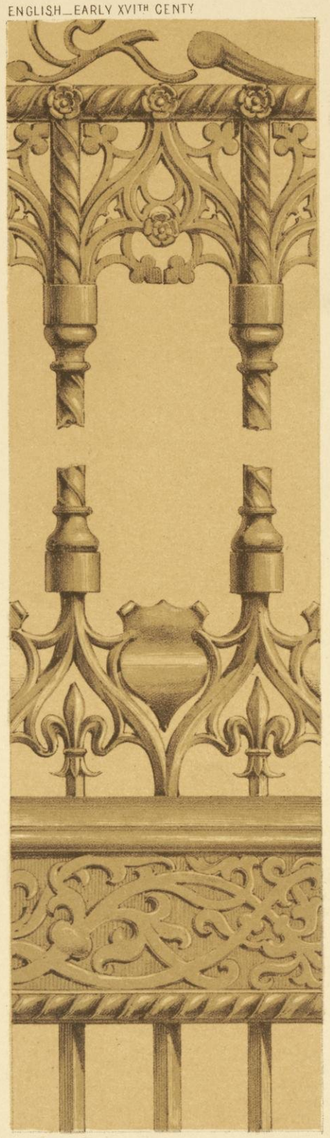
DAY & SON, LITHRS TO THE QUEEN.

FRENCH_XVTH CENTURY. FIG. 1.

C. BARRY, JUNR DEL.

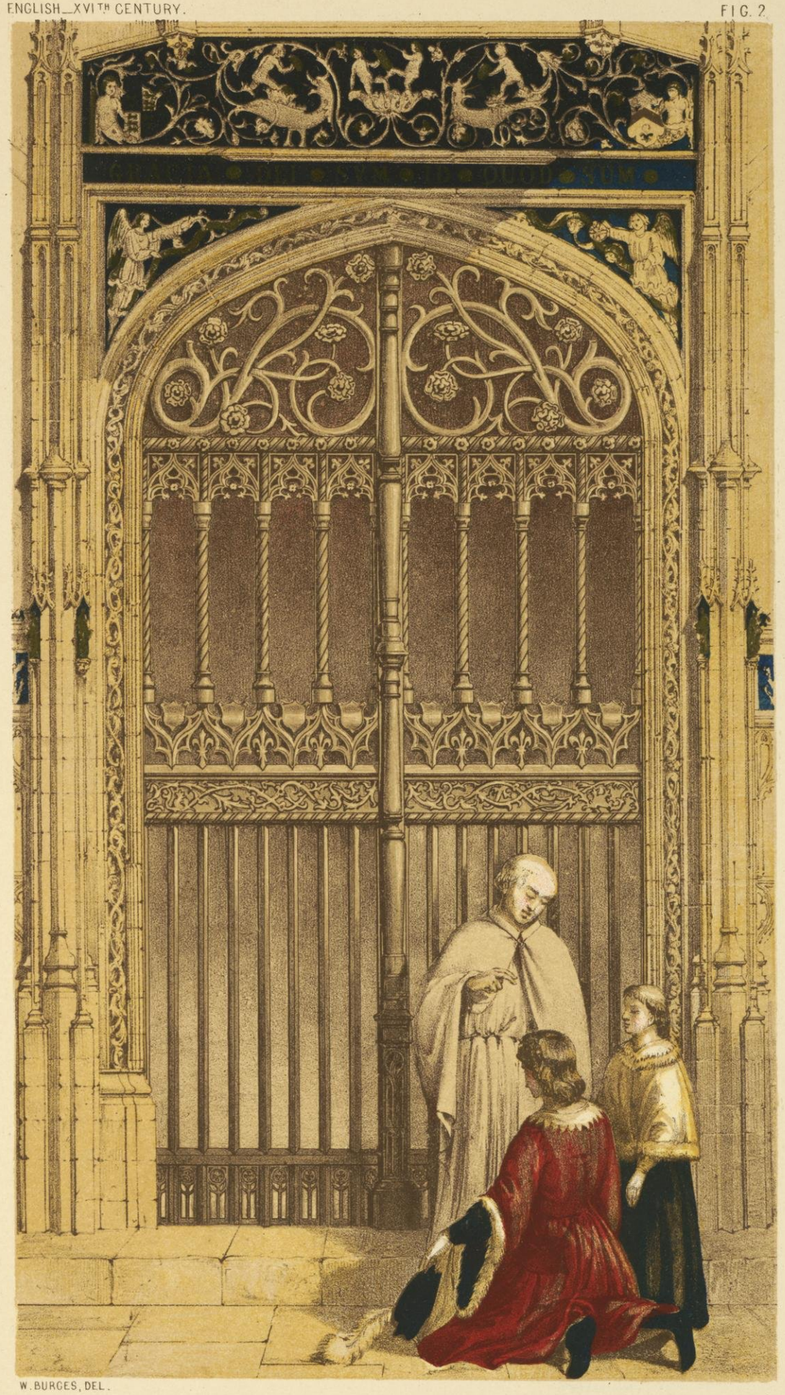
DOOR OF SACRISTY_ROUEN CATHEDRAL.

ENGLISH_EARLY XVITH CENTY



DETAILS
OF FIG. 2.

ENGLISH_XVITH CENTURY. FIG. 2.

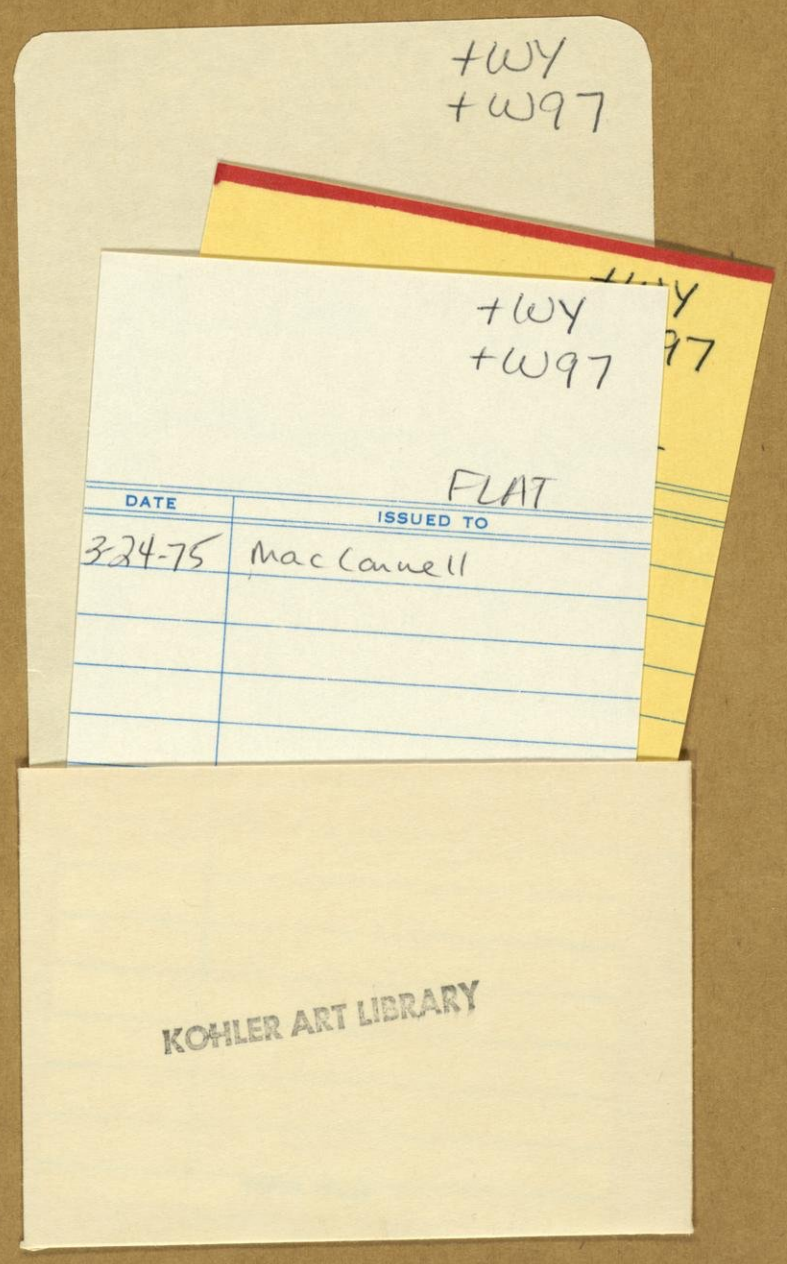


W. BURGES, DEL.

ENTRANCE TO BISHOP WESTS CHAPEL_ELY CATHEDRAL.

F. BEDFORD, LITH.

DAY & SON, LITHRS TO THE QUEEN.



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