

Part X.

Miscellaneous Information.

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Section I.

Selecting Hardware.

NO other material entering into the construction of a building will pay a larger return, in satisfaction, comfort and permanent economy, for time and care devoted to its selection than the "Finishing Hardware," but until lately none has had less consideration. The range of choice and quality has become too great, however, for the selection of Builders' Hardware any longer to be left to the general contractor under an omnibus specification, and the practice is fast becoming universal of according to it the benefit of careful and discriminating selection, by the architect or the client, or by both in consultation. And this holds good as to the many mechanical questions involved, as well as to those which relate purely to decorative effects; in both the architect's judgment, based on fuller technical knowledge, must be qualified by the client's preference and taste, or by the limit of cost which he imposes, except in those cases, unfortunately rare, in which the Architect is given *carte blanche* to do what he thinks best.

Hardware has become a factor, and an important one if well handled, in the interior ornament of the modern building, and its selection demands at least equal care with that given to other elements of interior decoration, such as lighting and mantel fixtures, wall papers, hangings, etc., all of which have always been the object of personal selection by architect or client, and are never merged in the general contract for construction.

The method which should be employed in all these matters depends primarily on the conditions. If the building in question

is intended for sale or renting, or if *cheapness* is the dominant factor, then a competitive method may be expedient; but if the client intends it for personal occupancy or for permanent ownership, then the competitive method may, and usually is, a poor one whereby to secure the best result. The desirable method in *all* cases is that a preliminary examination should be made, before any final decisions are reached, in order that both architect and client may have an intelligent general knowledge of the subject and of the range, in quality and prices, of the material available for selection. This accomplished, a decision can then be made as to the *grade* of Hardware to be used in the various parts of the building, and this decision will greatly simplify all the rest of the work. Broadly speaking, Finishing Hardware divides into three grades, viz: Cheap, Medium and Fine, as explained in Part III, Section 3, and by deciding upon one of these the process of selection in any case is greatly facilitated by the resulting elimination of all articles outside of the grade selected.

Whatever the method used, or the grade selected, preference can safely be given, in all cases, to the product of a manufacturer of known experience and established reputation. No matter how great the care and intelligence devoted to personal selection, the choice is limited absolutely to what the manufacturers see fit to provide, and is larger, of course, in proportion to the extent and variety of the line made by each. Where one manufacturer fully covers the whole field, and especially where his product is of known reliability and wide range, it is usually found advantageous to use the same make of goods throughout the building, rather than to select goods of different makes, and this practice increasingly obtains. The contrary practice tends to confusion and errors, to lack of harmony in style and in finishes, and to a division of responsibility which is undesirable.

Having decided on the *grade* of Hardware, the next step should be, preferably, a decision as to the Manufacturer from whose line it shall be selected in detail. The decision as to this is usually left to the architect, whose previous experience generally enables him to decide promptly which of the several lines available is the one to be preferred in the case under consideration. When this point is in doubt the catalogues of the manufacturers can be consulted or, still better, the samples of their work, to be seen in their several exhibit rooms and in those maintained by dealers who handle their products, may be inspected. It is now the general practice for each dealer to carry chiefly in stock the line of some one manufacturer, and this practice is based on sound reasoning, but no difficulty need be experienced on this score in obtaining whatever make of goods is desired, as inquiry will always elicit information as to where it is to be obtained.

The question may be asked if this method does not tend to eliminate competition and involve the payment of higher prices than necessary, in reply to which it is pointed out that the prices of the manufacturers, for staple goods shown by catalogue, are already well established, and are known to the trade generally, so that, even if short-sighted enough to desire to take advantage of such a situation, the manufacturers are not in a position which would enable them to do so, and that, if a check on the dealer is thought necessary, it can readily be had by calling for competitive bids from two or more dealers on an identical specification or schedule of Hardware. By this method the architect selects exactly what he wants, and has every assurance of getting what he has selected, whereas, if a mixed assortment of goods is used the process of selection is more difficult and uncertain, and the liability to changes and substitutions greatly increased.

Having thus decided on the maker and the grade of goods, the next step is to select in detail the goods to be used in each room, floor or division of the building, making such notes of the decisions so reached as will be convenient in framing the Hardware specification or the Hardware Schedule, as explained hereafter. These notes can usually be made with advantage in pencil on the plans, and then be incorporated subsequently, in proper form, in specification or schedule.

Section 2.

Allowance for Finishing Hardware.

ARCHITECTS are constantly called on to prepare preliminary estimates on proposed buildings to assist owners in determining their plans. For this purpose there is available knowledge of the cost per unit of masonry, woodwork, etc., which makes it feasible to compute their costs easily and with fair accuracy.

Builders' Hardware does not so readily admit of accurate preliminary estimating, and yet unusually bears a fairly constant ratio to the total cost of buildings of various types. The following figures, based on experience, indicate the range in this ratio under the conditions usually encountered in ordinary practice :

*Ratio of Cost of Finishing Hardware
to Total Cost of Building, Excluding Land.*

Hotels, large,	1.0	to	1.5	per cent.
“ small,	1.5	“	2.0	“
Apartment Houses,	1.5	“	2.0	“
Office Buildings,5	“	1.5	“
Public Buildings,	1.5	“	2.0	“
Libraries,75	“	1.5	“
Hospitals,5	“	1.0	“
Residences, City,	1.5	“	3.0	“
“ Country,	2.0	“	4.0	“

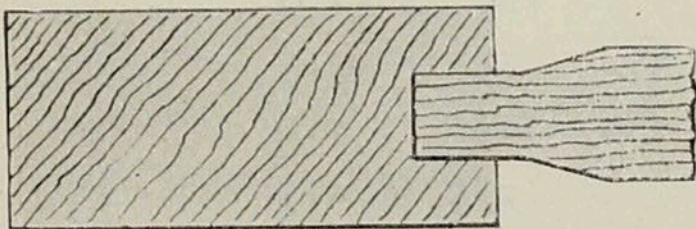
Section 3.

Detail Drawings for Hardware.

A PRACTICE prevails in some architect's offices which, at trifling cost, accomplishes most useful results and is worthy of general acceptance. This consists in putting onto one drawing sheet a *full size* cross section of every type of door stile in the building to which the drawing relates, and in furnishing copies of this drawing to the contractors for the cabinet trim and for the Finishing Hardware, thus ensuring that each of them has identical information, and that the work of each will assemble properly with that of the other.

Such drawings should show, as to each door, the dimensions of the transverse section of its vertical stile (which receives the lock and its trim,) the overlapping, if any, of panel moldings, the shape of bevels, rabbets and astragals, and any other details affecting the size and location of locks, butts, etc. The "hand" of doors is usually and better indicated on the floor plans. For the guidance of the *cabinet* contractor the drawing should indicate the veneer, or wood, to be used on each side of the door, and for the guidance of the *hardware* contractor the finish of the metal work, as illustrated by Fig. 1.

Parlor—Mahogany—Gold Plate.



Hall—Oak—Old Brass.
Fig. 1.

All of the questions which such a drawing should answer must be settled sooner or later, and by the architect. If settled in this way they will have due consideration at the

proper time, will usually be settled more carefully than is other-

wise likely, and, above all, will be so settled as to furnish the information to the several contractors concerned when they need it, in a form which precludes misunderstandings among them, and in a manner which will definitely locate the responsibility for any errors should they occur.

A further argument, if one is needed, is that the character and dimensions of metal work and locks are liable to be overlooked when arranging the paneling of doors, whereas both should be considered. The use of very narrow stiles is sometimes resorted to without sufficiently considering the disadvantages which result from the contracted space in which the lock and its trim must be placed. Where a narrow stile is proposed the architect should inform himself as to the locks which are available, and should provide space for the one selected. Special locks are always expensive, and a cramped space precludes the best construction.

Section 4.

Hints to Salesmen for "Taking Off" Hardware from Architects' Drawings and Specifications.

IN view of the fact that the compilation, from the architect's plans and specifications, of the "schedule" of hardware actually required in a given building, is commonly made by the hardware salesmen, the following suggestions are offered for their guidance. It would be better if, as in England, this work were done by a chartered "Quantity Surveyor" whose official "schedule" would form the basis of all bids, and it is to be hoped that this system will ultimately be established here. Until then the reliance of the architect must be on careful and thorough specifications, and on rigid inspection before final acceptance.

A schedule of the hardware for a building must be compiled from the specifications (which indicate the *kinds* of goods to be used) and from the plans (which indicate the number of the openings for which hardware is required, and, therefore, the *quantities* needed of each article.) To do this requires ability to read drawings easily and accurately, and, above all, *thoroughness* in every detail of the work.

The first step should be to study the specifications relating to hardware, and also the portion relating to carpenter work to see if the latter embodies facts which affect the hardware. The drawings should then be examined to gain familiarity with the building, the arrangement of rooms and other details. Having thus acquired a general understanding of the whole subject the compilation of the schedule may be begun.

The list of hardware should be compiled in a systematic manner, beginning at a definite point in the building and progressing through the several rooms and floors in a definite order, which will insure the inclusion of every part of the building and the careful consideration of every opening or other place where hardware is required. For example, in the case of a residence, it is usual to commence with the front entrance, involving the front and vestibule doors, passing thence to the hall, then taking each room on the first floor in due order, then passing to the second floor, taking each room on it in like order, and so on until each floor has been covered. The attic and basement are usually left to the last, because requiring a simpler class of goods. The same general system can be followed in the case of hotels, office buildings, apartment houses, etc., the essential point being that an *orderly method* should be followed, the rooms being taken in natural sequence, so that the chances of omission are minimized.

In the case of doors, it is necessary to state their thickness, hand, bevel or rabbet, number of butts required, and size of butt needed to clear the trim, and the design, metal and finish of the goods to be used, which frequently differ on the opposite side of the same door. In the case of sliding doors, the character of hangers and rail, and the length of run must always be noted. Where the door stile is narrow or is trimmed with heavy mouldings, the backset of the lock must be considered, and care taken to avoid interference between the hardware and the wood work. In the case of windows information is needed as to all details, and like care must be taken to harmonize the metal work and the wood work.

Where unavoidable interferences are discovered, or where the plans and specifications are obscure or defective, a note of the facts should be made, and when all such matters have been

collated they should be submitted to the architect for his decision as a basis for the final determination of the matters involved.

In drafting a schedule the name of each room or other division of the building should form a heading, and under this heading should be grouped all of the openings included in such room or division. Under the name of each opening, in like manner, should be grouped the hardware required therefor. Schedule orders thus prepared should be executed by the manufacturer in exact conformity with the instructions, the hardware for each opening being combined in a separate package and each package clearly labeled to indicate its contents and the room to which it belongs. When received, the packages can then be kept unopened until needed (thus protecting the goods against damage) and, as each room is ready for its trim, the proper packages can be selected and delivered to the carpenters, thus eliminating all trouble, either to the dealer or builder, and insuring the application of each article in its intended location.

Section 5.

The Hardware Expert.

MODERN industrial art has developed the necessity for professional advisors, specialists and experts in many fields of work. Among these, in the constructive arts, the architect stands in the front rank both in the importance and antiquity of his profession, as does also the engineer, using the word in the broadest sense.

In the arts, as in the sciences, the tendency of the day is constantly toward greater specializing. Modern science and modern art are too vast and comprehensive to be grasped in their entirety by anyone. The process of differentiation and specializing thus developed has already justified itself by demonstrating the fact that it conduces not only to better results but frequently also to better economy.

Unless the expert is intimately familiar with the existing conditions of his art, and fully informed concerning its latest developments, he is not in position to give the best advice or to obtain the best economic result. But to have this latest and fullest knowledge in any one of the important lines of industrial art implies that the possessor must be himself a worker therein, and this in turn implies that if he performs this duty well he can do little else.

Architects who are beginning to appreciate the distinction between the Hardware of Ornament and the Hardware of Construction are also beginning to ask how they can obtain the former under conditions which will give them the best result from a given expenditure. Few of them have that latest knowledge of the latest product of the art which is needed to

fit them for this work, and probably none in active practice have the time to devote to it. What then are they to do?

To answer this question, and to meet the want which it implies, there is coming into existence another specialist, namely, the "Hardware Expert," that is, a person trained in the art, knowing all of its present possibilities and familiar with its latest products. Added to these he must have such personal character, and such connections, as will give confidence and assurance to the architect who trusts him that the trust will not be abused. He must have the courage of his convictions so that on the one hand he will not hesitate, when necessary, to curtail expenditure within the limits consistent with due respect for the effect which should result even in the plainest and simplest work, and on the other hand, will not hesitate to insist on a more liberal expenditure in cases where mistaken economy, perhaps in minor matters, involves the danger of subsequent disappointment from incongruous treatment and lack of harmony resulting from unwillingness to authorize the expenditure reasonably needed.

Several of the leading manufacturers, among them the Yale & Towne Manufacturing Company, have provided a corps of trained experts of this kind whose services are placed at the disposal of architects and customers, especially in the selection of the metal work for buildings of the larger and more important kinds.

Section 6.

The Province of the Builder.*

THE relation of the man who builds a house to the man who designs it, and the relations of both to the owner, who is to pay the bills: these are vexed questions which each man tries to settle for himself, and which are, therefore, in what an Irishman would call “a permanently unsettled condition.”

In the first place the owner has an indistinct idea of what he wants, and a very positive idea about how much it ought to cost him, and is also firmly convinced that he knows all about it. He, therefore, engages an architect in order to have the privilege of telling him how to build his house for him, and incidentally also to make the designs and drawings, and superintend things generally.

When it comes to matters of detail the owner supposes that the architect will take care of them; if not, why have one at all? And so, after many changes and much discussion, the drawings are accepted and the specification and contracts prepared. At this stage the owner begins to appreciate the fact that there is a builder in the case, and that his province, after all, is to make the house for him.

Among the three parties there seems often to be an impression in the mind of each that he is really the man who builds the house. The owner talks freely of the house he is building, while the architect does not hesitate to call it his, however much his ideas may have been cut and hacked; and in the meantime the builder goes ahead with the work, and with many portions does pretty much as he pleases.

*From the *Trefoil*.

The result of this combination is not always satisfactory to any of the three. Of course the owner wants to get the best for the money ; but he doesn't always know just what he does want, and, hence it is the function of the architect to tell him what he wants, and the function of the builder to get it for him, and, furthermore, it is the province of the architect to see that he gets it.

This brings us to the real question in hand, the function of the builder. He is expected to take the contract at the lowest possible figure and to execute it in the best possible manner, and incidentally make a fair margin of profit for himself, he not being in the business from purely philanthropic motives. In carrying out these laudable objects he has his chart, the specification and the drawings, and if he keeps strictly to their limitation he does well. Much of the fault which is found with the builder is uncalled for, either in justice or in the specification, and when the shortcomings which are so frequently denounced, are heard, one is sometimes reminded of the housemaid, who, when reproved for not having divined the intentions of her mistress, retorted : “ Did you expect to get a mind reader for three dollars a week ? ”

The builder is all right if he is only given a fair chance ; but before he is called in at all the owner and the architect should make up their joint mind as to what they really want, and should say so clearly and unmistakably in specification and drawings. The articles which the owner should himself select ought clearly to be stated as being omitted from the specification and to be furnished when required ; and then, with the addition of a limited amount of common sense, there may be good reason to expect mutual satisfaction, and what is still more desirable, a fairly good building when all is done.

Section 7.

Factory Lock Equipment.

THE constant increase in the size of factories, and in the number of employees therein, has brought with it a corresponding increase in the need and value of reliable locks, for the protection of property, and for controlling or regulating access to various buildings and departments. These conditions have led to the development of master-keyed locks especially designed for factory use, and to the extensive introduction of the master-key system in industrial establishments.

The works' manager may now equip his plant with a system of locks such that each will have its individual key, controlling that lock but no other ; these locks in turn may be divided into groups, all in each group controlled by a master-key giving access to all locks in that department but no other ; the watchman may carry a master-key passing only such doors as it is necessary for him to open ; and finally all the locks in the entire series may be controlled by a grand master-key, for use only by the executive officers or owners.

The Yale lock, with its high security, master-keyed on the duplex system, is preeminently adapted for these purposes, and has long been in extensive use. For the best results a system of master-keyed locks should be planned by an expert, in consultation with the manager of the works for which intended, and architects are recommended to avail of such expert service for this purpose.

Section 8.

Lever Handles for Locks.

THE United States and Canada, following English example, adopted the knob instead of the lever handle for operating door locks, and, as a result, American locks are designed for use with *knobs*. This implies that they are not well adapted for use with lever handles.

The common knob is round, and therefore balanced. Even the oval knob is balanced so far as concerns its relation to the lock mechanism. The lever handle, however, is unbalanced, its weight being entirely on one side of the lock spindle. This implies the need of greater spring power in the lock, not only to resist the unbalanced weight, but also to afford a proper resistance to the hand when applied to the lever handle, the hand in this case acting at a much longer radius than in the case of a knob. In Continental Europe, where the use of the lever handle is almost universal, the established practice is to provide a very stiff spring in the lock to give proper support to the lever handle.

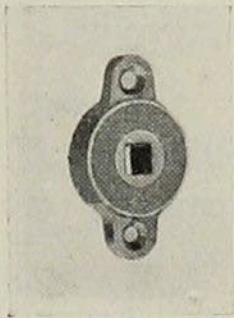


Fig. 1.

Lever handles are coming into use in the United States, not only for French windows and casements, but also occasionally for entrance and other doors. Where used with the ordinary lock they are thoroughly unsatisfactory, the lock spring being too weak to give the proper support to the lever handle. A remedy for this consists in the use of an auxiliary spring, supplementing the spring contained in the lock, and applied to the spindle behind the rose or escutcheon plate as shown by Fig. 1, but the only effective remedy consists in the employment of a lock designed expressly for use with lever handles.

Section 9.

Cut Glass Trim.

GLASS Knobs have been described on pages 944 to 951, and are available for use with metal Roses, Key Plates and Escutcheons of many styles.

In like manner glass is available as the material for Key Plates and Escutcheons, combined with either glass or metal knobs, as shown by the accompanying illustration (Fig. 1) and Fig. 1 on page 522.

Glass is particularly suitable for Push Plates and Finger Plates. Combined with proper metal work it is very effective.

It has long been used for these purposes in France, and merits more consideration here than it has heretofore received, especially in residence work, where it is particularly appropriate. Necessarily glass hardware, except of very simple kinds, must be made to order, and the material lends itself readily to special forms designed to harmon-

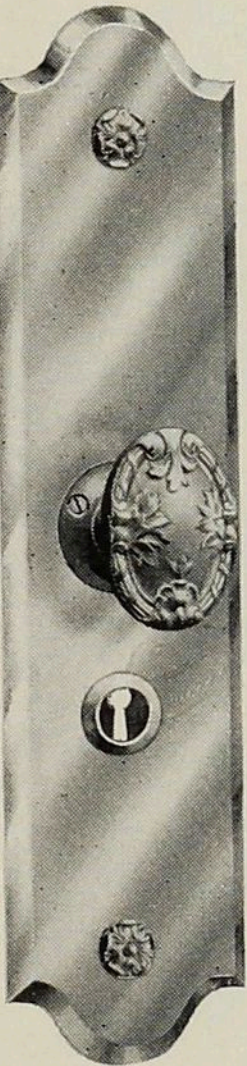


Fig. 1.

ize with the surrounding decorations.

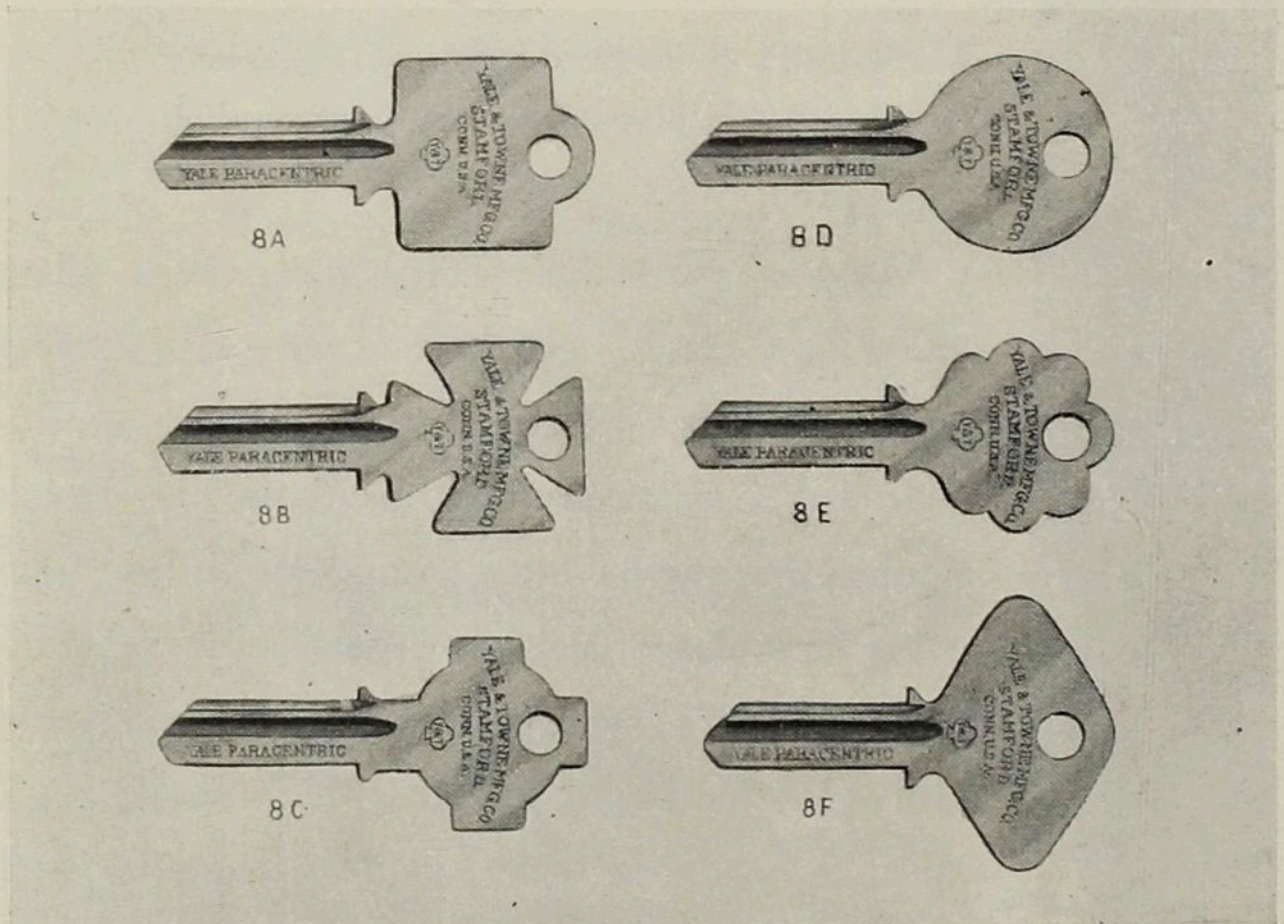
Section 10.

Special Key Bows.

IN the pockets of the modern man, and often of the modern woman, will be found, *inter alia*, three essentials, a purse, a watch and a bunch of keys, and often the latter is the bulkiest of the three.

By the judicious use of "master-keys," as explained elsewhere, its bulk can often be much reduced, but at best it usually comprises a number of keys, and frequently several of these are of the same type, and, therefore, difficult to distinguish, especially in the dark.

To meet this difficulty it is recommended that important keys, especially the night-latch key, should have a bow of *special form*,



perceptible by touch as well as by sight. The illustrations herewith show various keys with special bows which are available for use with the Yale Locks, and which can be had at slight additional cost.

Section 11.

Key Tags for Hotel Use.

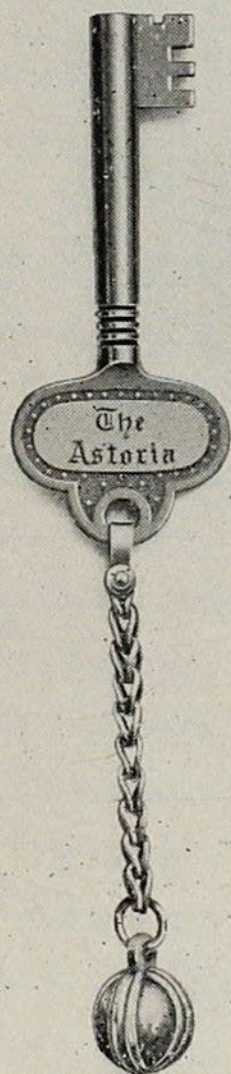
EVEN the key tag, humble as its function is, has shared in the recent march of improvement, and has taken on new and better forms.

Formerly hotel managers sought to prevent guests from carrying away hotel keys, either through inadvertance or intention, by

attaching to each key a large tag, or iron or brass, so cumbersome as to practically preclude its being carried in the pocket. Happily, this primitive plan is now almost obsolete.

As a result of a tendency to the other extreme, hotel managers largely dispensed with key tags of all kinds, and contented themselves with having the name of the hotel and number of room plainly stamped on the key bow.

The latest and best development in this matter is shown by the accompanying illustrations. It consists in attaching to the key bow, by a short chain, either an ornamental disc bearing the name and number, or else in a simple ball, the name and number being retained on the key bow.



The Waldorf.



The St. Regis.

In either case the short pendant serves convenience in the use of the key, diminishes the danger of its being misplaced, and, if well designed, contributes to its appearance.

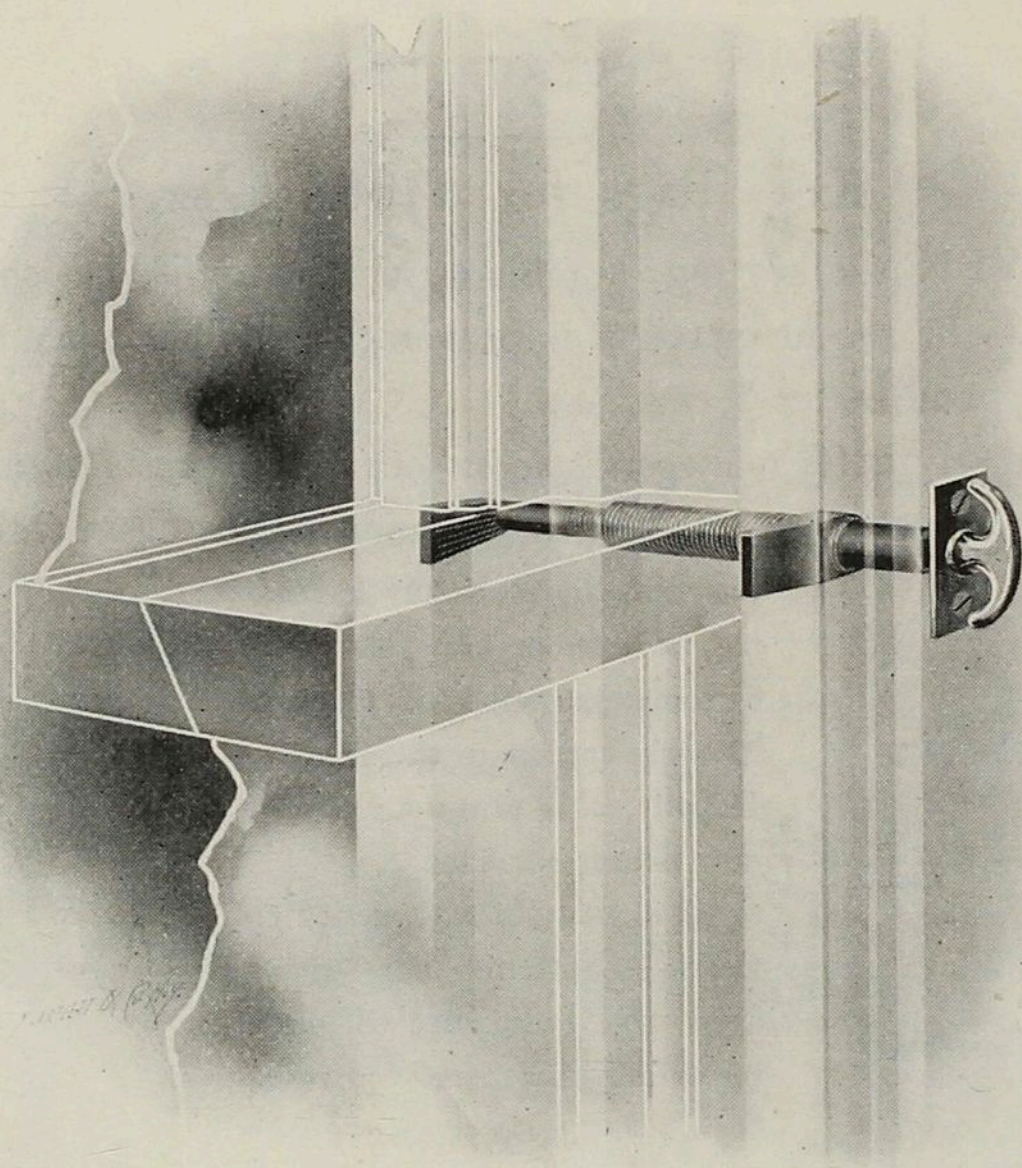


Fig. 1.

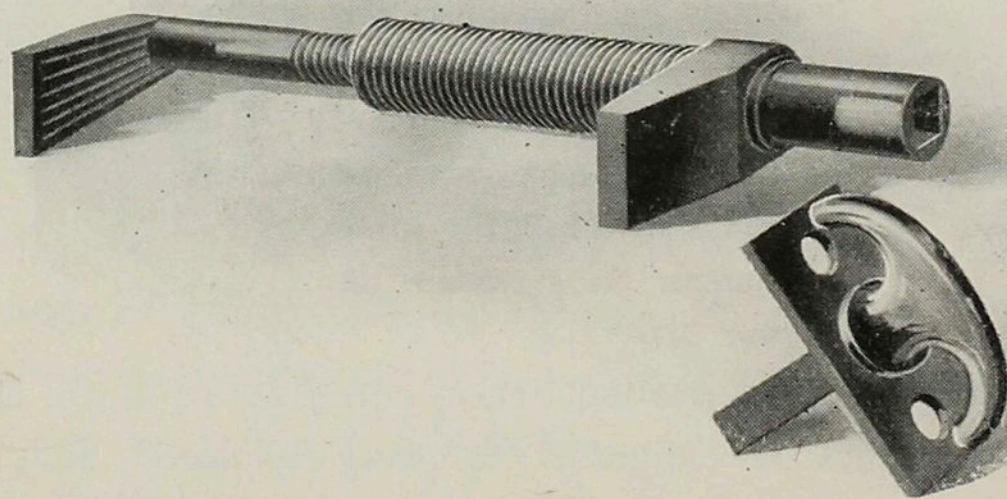


Fig. 2.

Section 12.

Frictional Sash Fast.

THE requirements of a good Sash Fast of the standard type has been discussed on page 181, and various forms of such Sash Fast are illustrated on page 806.

Recently a Sash Fast of another type has been placed on the market which possesses some advantages over those of the common type. This is a frictional device which, by clamping the two sashes together and against the parting-strip, locks them in any position, open or closed, and at the same time tends to prevent their rattling.

Its construction will be apparent from the accompanying illustrations. The device consists of a metal clamp in two parts, mortised into the window frame, its inner end provided with a socket to receive either a detachable key, or the spindle of a fixed thumb-piece, as preferred. Turning the key or thumb-piece in one direction causes the two lips of the clamp to approach, thus forcing the sashes tightly together. Turning the screw slightly in the other direction releases them. One of these sash clamps to a window will suffice, but a better result is obtained from the use of two, one on either side. They enable the sashes to be firmly locked in any position.

This new device is made by the Yale & Towne Manufacturing Co., and is designated the "Cinch" Sash Clamp.

Section 13.

Door Locks of the "Unit" Type.

THE standard "lockset" consists of three elements, viz: (1) the lock, (2) two escutcheon plates, and (3) a pair of knobs, with their connecting spindle, supported by bearings in the escutcheon plates. These elements are not united until placed on the door and permanently attached to it.

Recently a new type of lockset has been introduced, the leading example of which is the Corbin "Unit" Lock, in which all of the elements are permanently united in a metallic construction by the lockmaker, so that the lockset is applied to the door as a *unit* or whole. The construction implies that, instead of cutting a mortise in the door to receive the lock, a section of the door stile must be entirely cut away. Obviously the door stile is correspondingly weakened, but the claim is made that its strength is practically restored by the overlapping of the escutcheon plates, which are firmly screwed to the stile above and below the cut made to receive the lock.

Undoubtedly the consolidation of the component parts of the lockset into a single unit is a mechanical improvement so far as the lock and its trim are concerned, but this improvement is obtained at the sacrifice of a serious impairment of the strength of the door, and also by discarding some of the features in lock construction which experience has shown to be best or most acceptable, and by substituting others, less acceptable, to meet the special conditions created by the "unit" construction. Thus, in the Corbin "Unit" Lock, in order to reduce the size of the lock and thereby minimize the amount of cutting of the door frame, the key-hole is placed in the center of each knob (instead of

above or below it), and a ring or collar on the knob shank is used to control the stop-work of the lock. These features, while simple to one familiar with them, are unfamiliar and puzzling to others, and therefore less generally acceptable and convenient than the standard construction, which is understood by everyone.

If the “Unit” type of lockset proves to be permanently desirable, undoubtedly it will be modified and improved by experience. Probably it will be found preferable to locate the keyhole in its familiar position above or below the knob, and mechanically there is no difficulty in doing so. The increase in the size of the lock case thus involved is vertical, not horizontal, and the additional amount required to be cut out of the door stile does not further weaken the latter. It is too soon yet to forecast the probable trend of public preference in regard to this new type of lockset, but it is safe to predict that, if it is permanently called for, it will be developed on lines which will minimize its objections and will make it mechanically safe and reliable. Artistically it involves features which are objectionable, but which are inherent, especially a projecting lip or flange on one side of the escutcheon plate, which is certainly irrelevant and out of place, from the decorative view-point, especially in the case of an ornamental design.

Section 14.

Casement Window Construction.

AS STATED elsewhere, the Casement Window with hinged sashes, although in universal use throughout continental Europe, is almost unknown in America and but slightly used in England. Believing that American architects, in view of the increasing use of casement windows here, especially in country houses, would be glad to have information concerning the modes of constructing such windows which prevail in the countries where they have been used for centuries, and where experience has developed the best methods for making them weather-tight, the author, during a recent visit to Germany and France, obtained the information embodied in the drawings which are reproduced herewith.

Plate No. 1 (page 1084) shows the construction commonly used in North Germany, where the sashes usually open *outward*. In this case the chief difficulty in making the sash water-tight is at the *top*, whereas, when the sashes open inward this difficulty is greater at the *bottom*. The method of hinging involves the use of a type of butt as yet practically unknown here. It is made of sheet steel, its thin blades being inserted in slots, made in the wood by a special tool, and fastened in place by pins driven through the wood and through holes in the butt, the construction causing the butt to press the sash, when closed, tightly against the window frame. The fastening usually employed is an espagnolette bolt, the ends of which, when rotated, engage with pins set in the frame, or in a neat metal box let into the frame, at top and bottom. The joint of the meeting-rails is of the round, interlocking type.

Plate No. 2 (page 1085) shows a construction employed in South Germany, including the use of double sashes where desired, the two sashes then being coupled together by a linking device, so that both are operated and secured by a cremorne bolt on the inner sash. These sashes open *inward*, and the joint of the meeting-rails is rabbeted. The butt is of the same construction as in plate No. 1, (page 1084), but the vertical joints of the sash and frame are undercut, thus making them tighter. The two ends of the cremorne bolt move vertically to engage with the keepers at the top and bottom of frame, and a projecting spur engages with a tapered hook to draw the sashes together at the center.

Plate No. 3 (page 1086) shows the construction generally used in Paris, the sashes opening *inward*, and the meeting-rails having an interlocking joint. The method of shaping the hanging-stile enables an ordinary butt to be used, and yet forms an excellent weather-tight joint. The fastening device is either a cremorne or an espagnolette bolt, the latter being preferred in buildings of the better class.

Plate No. 4, (page 1087) shows details of the door construction commonly used in France, and the application therewith of Rim Locks of the French type. It also shows the French method of hanging an inside shutter or blind when used in combination with a casement sash.

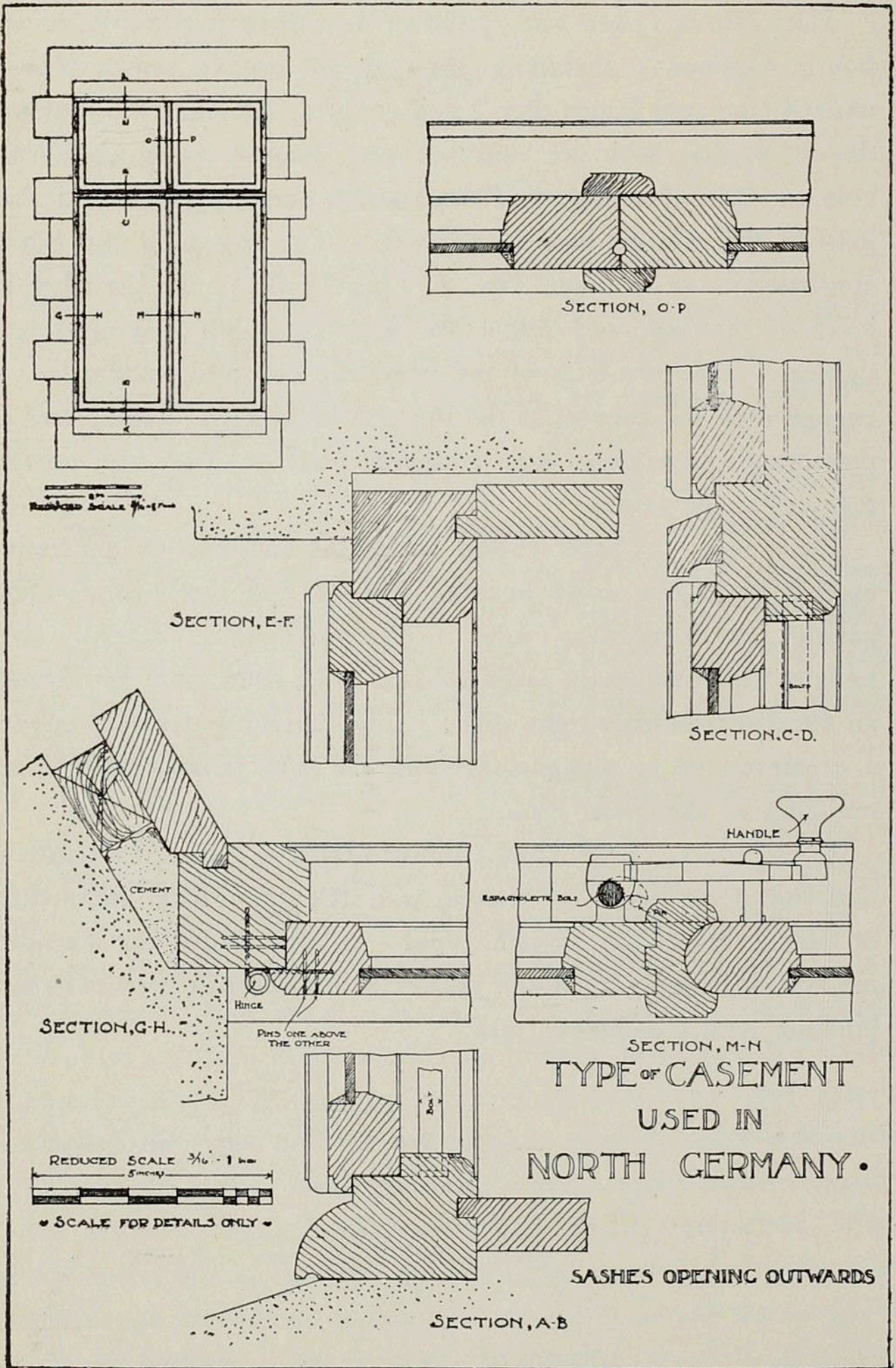


Plate No. 1. North Germany.

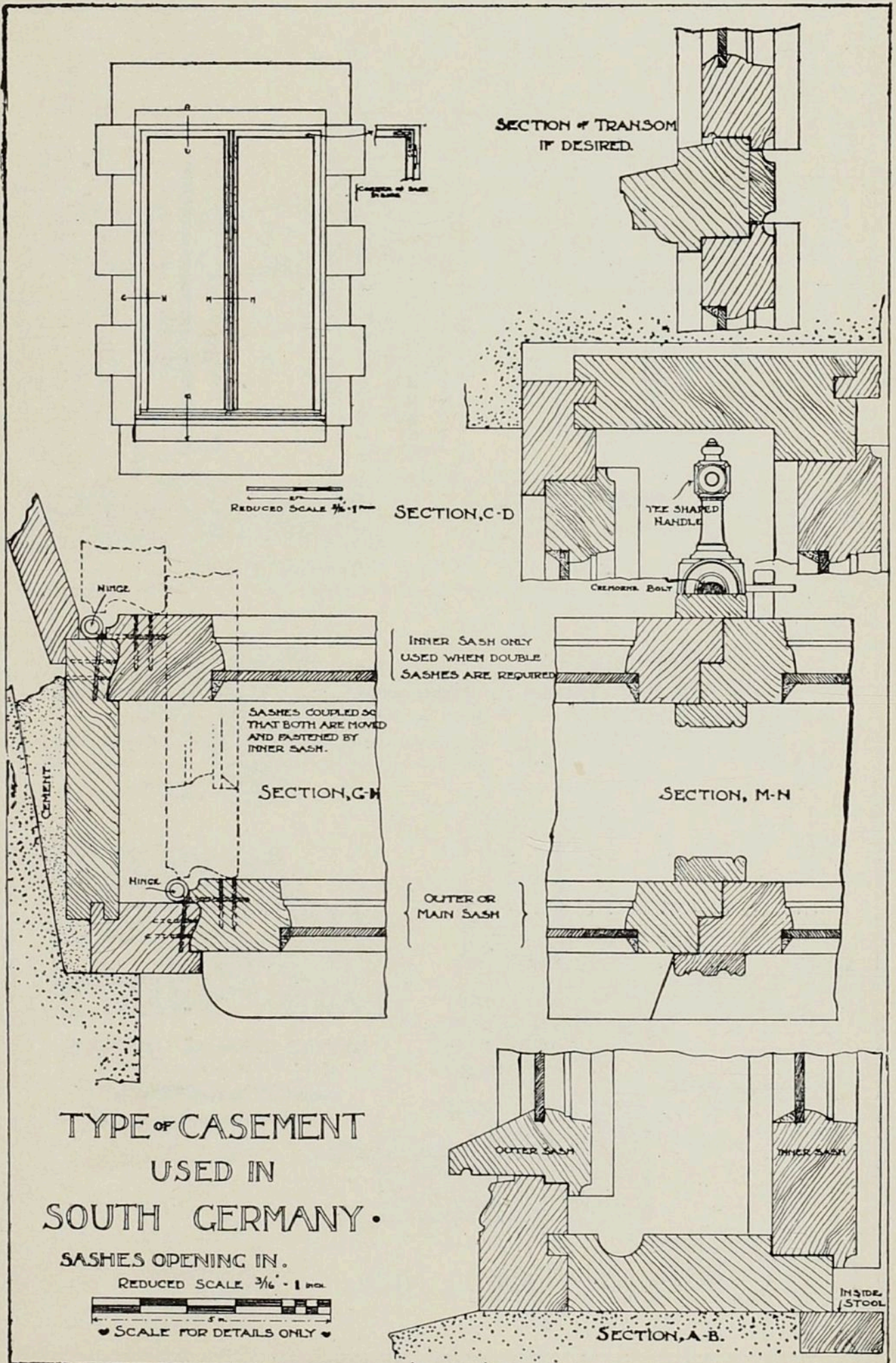


Plate No. 2. South Germany.

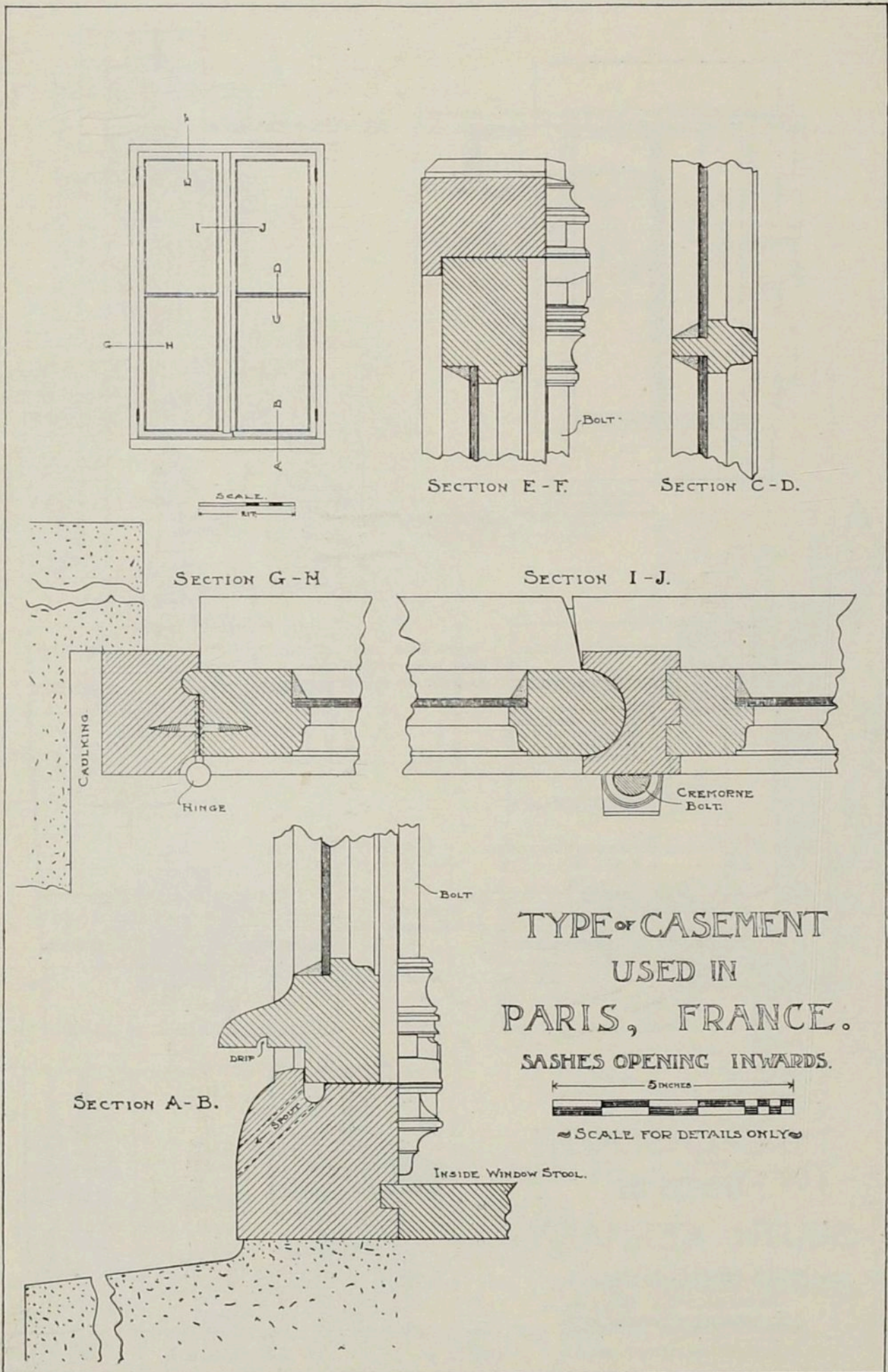
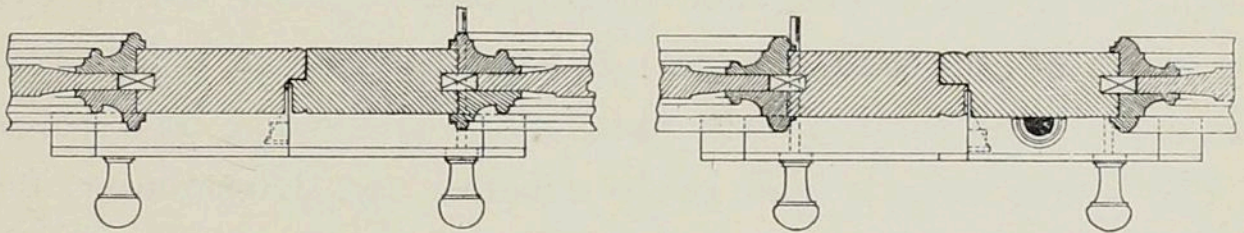
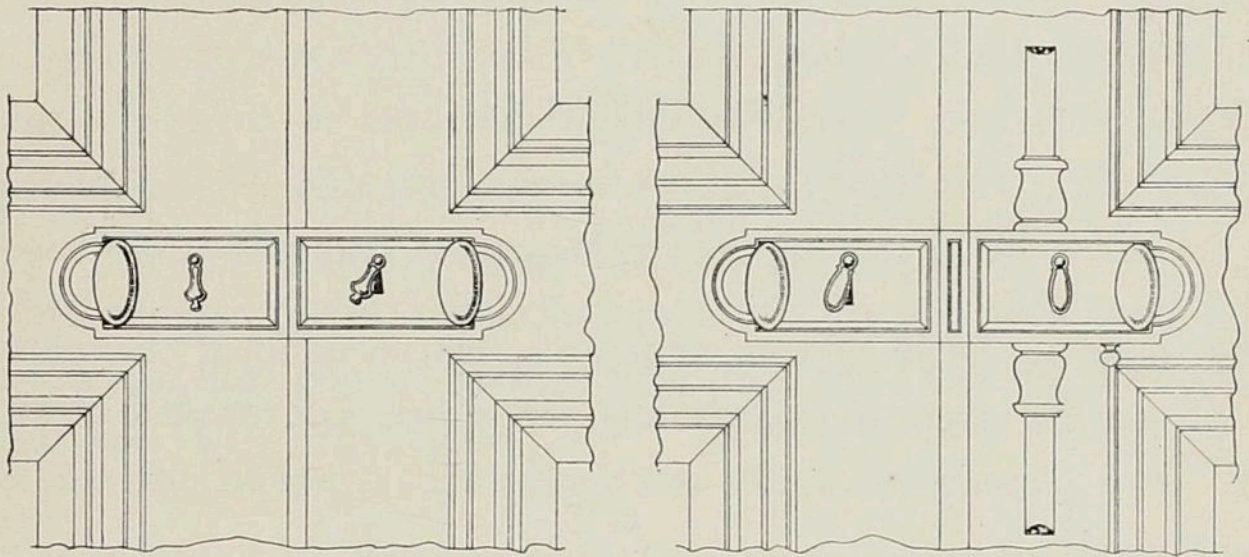
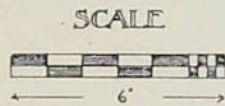


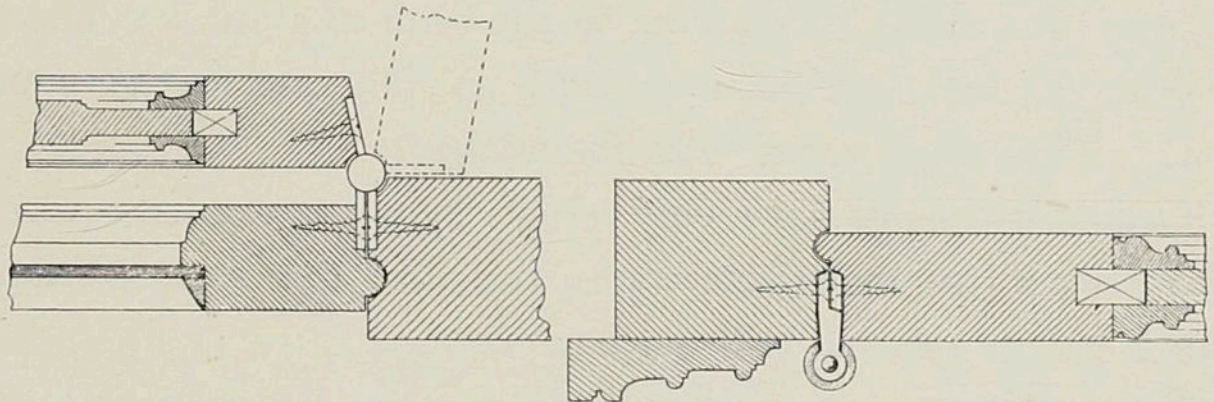
Plate No. 3. France.



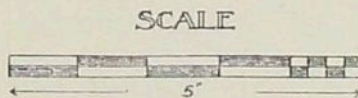
ENTRANCE DOORS
AND LOCKS



ENTRANCE DOORS
AND
LOCKS WITH CREMORNE BOLTS



TWIN SASHES
AND
3 LEAVED HINGE



HANGING STILE AND HINGE

DETAILS OF
FRENCH DOOR CONSTRUCTION

Section 15.

Weight of Sashes and Glass.*

IN figuring the weight of windows, the weight of the glass may be taken at $3\frac{1}{2}$ pounds per square foot for plate glass, $1\frac{1}{3}$ pounds for double thick glass and 1 pound for single thick glass.

For the weight of the wooden sash, add together the height and width of each sash (in feet) and multiply by 2.1 for $2\frac{1}{4}$ inch sash; $1\frac{2}{3}$ for $1\frac{3}{4}$ inch sash, and $1\frac{1}{3}$ for $1\frac{3}{8}$ inch sash.

The above data is sufficiently accurate for determining the size of sash cords and pulleys, but the weights should be determined by weighing each sash after it is glazed as the weight of the glass will vary considerably.

SASH WEIGHTS.—The weights ordinarily used for balancing windows are made of cast iron, in the form of a solid cylinder, $1\frac{1}{2}$ or $1\frac{3}{4}$ inches in diameter, with an eye cast in the upper end. The length varies with the weight.

Ordinary weights have very rough eyes for the sash cords. There are a few manufacturers in the East that make weights with a patent eye that will not cut the cord.

LEAD WEIGHTS.—It often happens that for wide and low windows the weights, if of iron, would be so long that they would touch the bottom of the pocket before the bottom sash is fully raised. In such cases lead weights are usually resorted to, lead being eighty per cent. heavier than cast iron. By casting the weights square, whether of iron or lead, considerable saving can be made in the lengths.

*From "Building Construction and Superintendence"; by F. E. Kidder.

The United Lead Works and the National Lead Works of New York make a specialty of compressed lead sash weights. These weights are made with wrought and malleable iron fastenings centered so that the weight will hang perfectly plumb. When lead weights are necessary it is expedient for the architect, where possible, to specify their weights.

In hanging the sashes the weights for the upper sash should be about one-half pound heavier than the sash, and for the lower sash one-half pound lighter.

Section 16.

The Care of Locks.

LOCKS, like any other pieces of mechanism, need reasonable care and attention to keep them in their best condition. They contain moving parts, and this implies friction, wear and need of occasional lubrication.

The chief point of friction is the beveled latch bolt, and this is easily lubricated. All that is needed is to clean its face and back with a cloth moistened with naphtha or kerosene, to remove any dirt, and then to wipe these surfaces with another cloth saturated with sewing machine oil, or still better with vaseline, thus renewing the lubrication. Any house servant can do this simple work, and if done once or twice a year it will keep the bolts in good condition at all times, so that each door will close easily and quietly.

Another external cause of trouble heretofore has been the tendency of the old-fashioned knob-screw to loosen, and the knob to come off. The advent of the "screwless" knob and spindle, of which the "Triplex" knob is a good example, is eliminating this defect from modern buildings, but where the old style knobs, with side screw, are still in use it is a good plan to inspect them occasionally, and to tighten all loose screws with a good screw-driver, although a more radical remedy is to replace them with screwless knobs.

Undoubtedly the best result in these matters will be reached by having all locks and hardware inspected by a *lock expert* at regular intervals, say once a year, and the trifling expense thus entailed will be amply repaid by the increased comfort and by the avoidance of other expense for repairs.

Section 17.

The Care of Hardwood Floors.

FOR finishing hard wood floors two methods are in common use. One consists in treating the floor with an approved "filler," and then applying a varnish. Necessarily this process is beyond the scope of household practise, and must be done by painters.

The other process, usually preferred, is that known as waxing, which is easily available for domestic use. The following directions for waxing, which have been approved by long practise, may be of interest.

Use pure yellow beeswax, diluted with spirits of turpentine. Melt the beeswax in a tin pot, placed within another vessel containing water, adding enough turpentine to make the mixture, when hot, about as fluid as rich milk. Be careful not to overheat or to place the pot directly on the stove, as the turpentine is inflammable. Keep it warm while using by standing in a vessel of hot water or on a hot stand of iron.

The floor, when waxed, should be clean and perfectly dry. Apply the wax with a thick, flat painter's brush, about six inches wide, with bristles three or four inches long. Cover about one square yard quickly with the brush and then immediately rub the wax well into the floor with a bunch of oakum in each hand, (soft rags will do, but oakum is better). When the wax has been thoroughly rubbed in, then treat another square yard in the same manner, and continue thus until the whole floor is covered.

Finally, polish the whole floor with a stiff brush, which

should have a surface about nine by twelve inches, and short, stiff bristles thickly set. This brush must be loaded with a stone or iron weight of at least 25 pounds. It should have a short wooden handle pivoted to the back of the brush, so that the whole can be swung back and forth across the floor by means of the handle.

By rubbing a little dry wax on the brush, and going over the floor with it once a week, the floor can be kept bright and clean.

A floor will need to be rewaxed every six to twelve months, according to amount of use. New floors will need it more frequently. No water should be used on a waxed floor; it may be swept or dusted with a fine brush or cloth. Black spots (due to dust gathered by the wax) can be washed out with clear turpentine and the surface then rewaxed.

DIRECTIONS FOR OILING HARDWOOD FLOORS.

FOR KITCHENS, HALLS, ETC.

To make one gallon of the oiling mixture, combine the following ingredients ;

- 3 quarts of raw linseed oil.
- 1 $\frac{1}{2}$ pints of turpentine.
- $\frac{1}{2}$ pint of liquid dryer.
- 2 ounces raw umber, ground in oil.

The umber gives a pleasing color to the finish, but may be omitted if desired.

The floor must be perfectly free from wax, varnish or paint, and must also be clean and dry.

Apply the oil finish freely with a large, flat brush, and then rub thoroughly into the wood with waste or oakum. In rubbing use large pieces of waste or oakum, in each hand, and bear on heavily while moving over the floor. Be very careful to remove and burn the waste or oakum when through with it to avoid danger from spontaneous combustion.

Section 18.

Grammatical Propositions.*

THE Decorative Arts arise from and should properly be attendant upon architecture.

Construction should be decorated. Decoration should never be purposely constructed.

All ornament should be based upon a geometrical construction.

The principles discoverable in the works of the past belong to us ; not so the results. It is taking the end for the means.

True beauty results from that repose which the mind feels when the eye, the intellect and the affection are satisfied from the absence of any want.

As in every perfect work of architecture a true proportion will be found to reign between all the members which compose it, so throughout the Decorative Arts every assemblage of forms should be arranged on certain definite proportions ; the whole and each particular member should be the multiple of some simple unit.

* From "A Grammar of Ornament" by Owen Jones.