

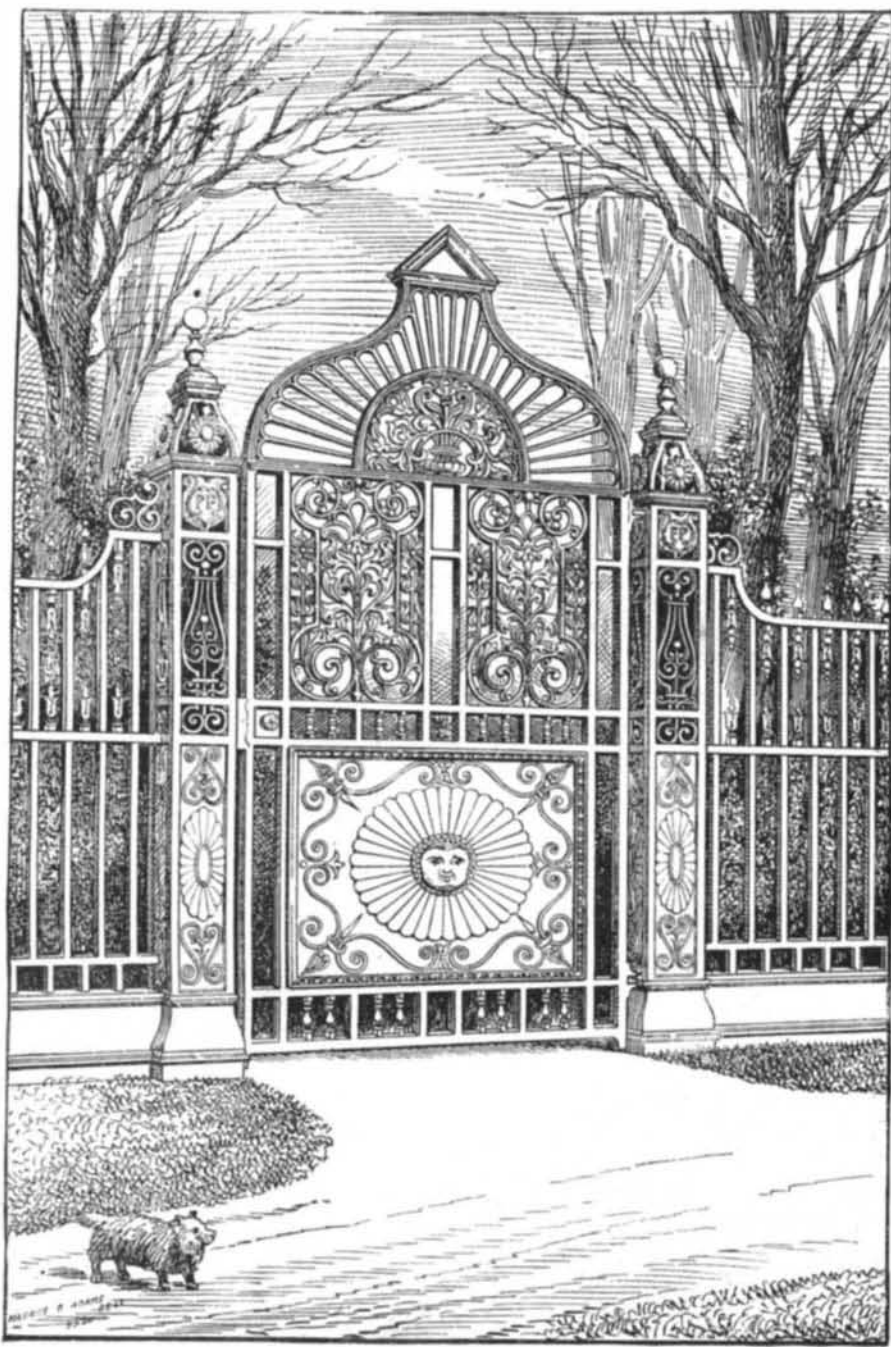
MONUMENT IN ST. STEPHEN'S CATHEDRAL, VIENNA.

Our engraving represents the monument to be erected in St. Stephen's Cathedral, at Vienna, in commemoration of the delivery of Vienna from the Turks in 1683. The monument was designed by Mr. Edward Hellmer, who received the first prize in the competition.

The middle group of the monument represents Count Ruediger von Starhemberg, the liberator of Vienna, mounted on a horse and resting his field-marshal's staff on his left thigh. The horse is represented as treading on a fallen Turk, who, in dying, raises the green flag of the Prophet. Count Von Starhemberg is accompanied by the color-bearer of the Vienna citizens and the leader of the Vienna students. The statue on the left hand end of the base represents Bishop Kollonitz, and that on the right-hand end Burgomaster Von Liebenberg. An angel soars over Count Von Starhemberg, and holds a laurel wreath in its right hand, and a cross, the symbol of faith, in its left hand. Two Corinthian columns are arranged at each side of the central group, and each pair of columns supports a group of statuary; the one at the left hand representing the Polish King Johann Sobieski, and the Elector Max Emanuel, of Bavaria; and that at the right representing Karl von Lothringen and Johann Georg III., of Saxony. A statue of the Emperor Leopold I., in full armor, crowns the entire monument. The victory of the united armies over the Turkish host of Kara Mustapha is represented in relief on the base.—*Illustrirte Zeitung*.

IRON ENTRANCE GATE.

An endeavor has been made in this design, recently executed by the Coalbrookdale Company, to render the general



ORNAMENTAL IRON GATEWAY.

forms, as well as the ornamentation, suitable for cast metal, with some regard to the value of repeats, so desirable in work produced by the foundry. The lower panel shows the same on both sides, like the remainder of the work, and is made up, consequently, in two thicknesses. It has the conventional figure of the sun, adapted from the design of some old plaster work at Rome. The standards and railings are also in cast iron, as well as the plinth, which is built on a brick or stone foundation. The designs were prepared by Mr. Maurice B. Adams, A.R.I.B.A.—*The Building News*.

COLOR HARMONY.*

By G. H. MORTON, JR.

HARMONY of color consists in three color sensations being equally excited, either jointly or separately, by all the colors of a composition, the mean or general tone of which will consequently be some shade of white. It therefore appears only necessary to ascertain the relative proportions of the three fundamental colors in order to obtain a correct basis of harmony. The subject of color, however, has two sides—the scientific and the artistic. Physicists have proved

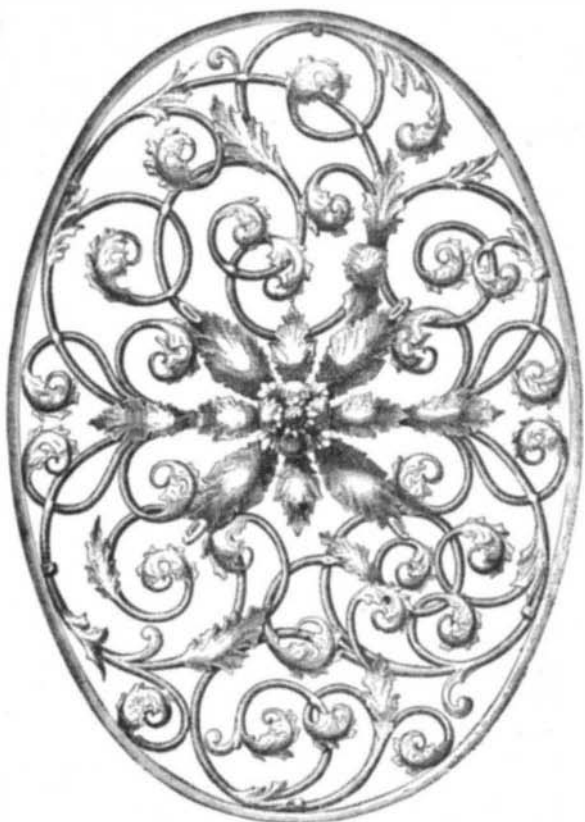
that the three primary sensations are scarlet, green, and violet, while most artists still support the old theory that the three primary pigments are crimson, yellow, and blue. It has therefore to be determined in the first place, which of the two sets is correct, or are both? Admitting that scarlet, green, and violet are the three primary sensations because supported by Helmholtz, Tyndall, and, I think, by all modern physicists, we have to inquire upon what foundation the crimson, yellow, and blue theory rests, and what relation these colors bear to scarlet, green, and violet. We cannot obtain any of the colors of the primary pigments by mixture, but conversely almost all other colors are obtained from them. The particular hues of red, yellow, and blue which mix best with the greatest number of other pigments are a crimson red, a yellow neither green nor orange, and a blue of a greener hue than is often implied by that term. Crimson, yellow, and blue have therefore been named primary colors.

Each of these colors appears to have the power of exciting two primary sensations, and is therefore complementary to green. Yellow excites scarlet and green, and is complementary to violet. Blue excites green and violet, and is complementary to scarlet. Colors approximating to the primary sensations may be obtained by combining two primary pigments. This relationship of the two sets proves that the primary color sensations are equally excited in both sets.

It will be seen that harmony of color being produced by scarlet, green, and violet, will also be produced by crimson, yellow, and blue, and that whether we adopt the scientific or the artistic theory as a basis for color schemes, our results as to harmony will be the same—provided the pigments we employ are combined in a scientific manner, as color. True combinations of colors as components of white

proportions to white light are respectively about four, seven, five; quantities, especially as regards yellow and blue, almost the reverse of what they were formerly considered to be.

Color harmony is sometimes divided into two parts. Chevreul divides it into harmony of contrast and harmony of analogy. Strictly speaking, there can be no such thing, in color, as harmony of analogy; because all true harmonies, when reduced to their simplest form, contain the greatest possible contrasts. Chevreul subdivides analogy into three parts, and names them harmonies of scale, of hue, and of a dominant colored light. The first is produced by different tones or shades of the same color only being employed. Such a scheme, it is scarcely necessary to point out, would not be harmonious. The more saturated or intense the color



SUGGESTIONS IN DECORATIVE ART.—WROUGHT IRON GRILLES IN ST. GILES' CHURCH, LUBECK, SEVENTEENTH CENTURY.

light, can seldom be obtained in the ordinary way by mixing pigments together. One of the most convenient methods for colorists is by a rotating disk, on which the colors are placed. The disk is then revolved rapidly till the colors appear blended. By this means the following results are obtained: Scarlet and green produce yellow; scarlet and violet, light-crimson or pink; green and violet, blue; yellow and blue, gray. These results differ considerably from the colors generally obtained by mixture, and I think sufficiently prove the errors caused by combining colors as pigments, and not as components of white light.

Proportion in color harmony is of much importance. Until recently the theory was that, dividing white light into sixteen parts, the proportions of yellow three, red five, blue eight, would be obtained; and no composition was considered harmonious unless these colors were present, either pure or combined, in these particular quantities. Professor Rood, however, in a work entitled "Modern Chromatics," gives an almost opposite hypothesis, and his calculations are especially valuable from the fact that, in addition to his being a professor of physics, he is also a practical artist, and therefore conversant with both sides of this subject. To go over his calculations would be tedious and occupy much time; but having abstracted crimson, yellow, and blue from some twelve colors he enumerates, I find that their

the worse would be the effect, for any color when lightened necessarily brings in a portion of the remaining colors, by which it is neutralized, with the white introduced—hence all light tones of colors are more or less satisfactory. Shades of a color are also not displeasing from the fact that much of the color is absorbed by the black. An instance of this so-called harmony was demonstrated a year or two ago in the adoption of very dull colors in decoration and dress. In such schemes proper harmony seldom existed, but discord was hidden by the introduction of so much black or gray. Chevreul's harmony of analogy of hue is produced by any colors of analogous tones or shades, and may therefore include colors which constitute true harmony. An analogous effect by a dominant color, Chevreul's third harmony, results from one color being added to all the others in the composition. It can, perhaps, best be realized by viewing a scheme through colored glass; the color of the glass seems to pervade everything. A deep red sunset scene is also an example, red being the dominant color.

The prismatic image illustrates an analogous arrangement of harmonious colors. Beginning at the red end we have crimson, scarlet, orange, yellow, green, blue, and violet, with the most delicate hues between, so that where one begins or ends we cannot tell. All the contiguous colors, so

* From a paper read before the Literary and Philosophical Society of Liverpool.

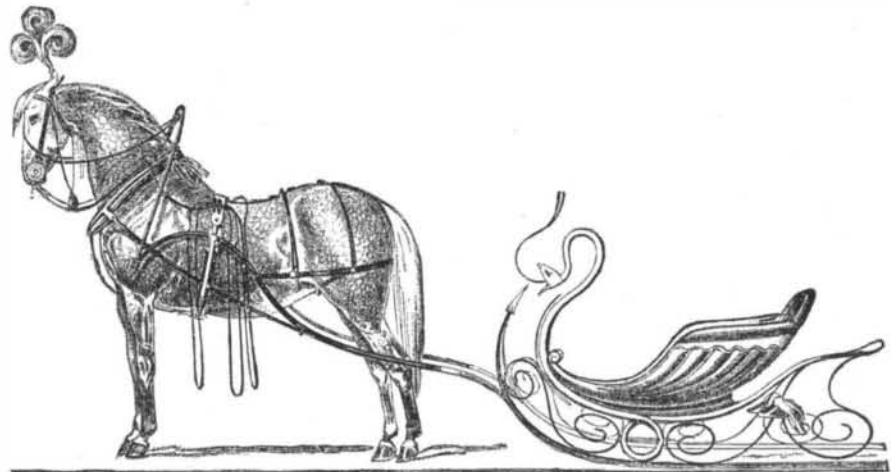
to speak, are analogous, and yet the whole includes the greatest possible contrasts. It may, I think, be concluded that analogy is the method by which contrasting colors should be connected, and not placed in violent opposition, and in this sense may be included in the term harmony, but is incomplete in itself. Analogous color schemes have lately been termed "tone harmonies" by modern colorists, owing to the late prevalence of dull tints—tints, in many cases, in which little color is visible at all. The harmony, as the term implies, is of tone and not of color. Mr. C. W. Dempsey, in an article published about three years ago, stated that Mr. Morris, in decoration, and Mr. Whistler, in painting, were among the chief exponents of "tone harmonies," and the success achieved by them was well known. But Mr. Morris appears, to me, to be now more inclined to contrast or, at least, to more distinct and definite color. Mr. Whistler seems as peculiar as ever, his recent "arrangement" being proof enough.* In the article referred to, the two sides of color—the science of color, and the art of coloring, and the technical meanings of the principal terms in both—are pointed out; these terms are harmony and melody. Harmony I have already defined, and Mr. Dempsey defines melody as "two or more colors in such juxtaposition that they form a part or the whole of the prismatic spectrum, whether in their natural, direct order, or inverted." Melody, then, seems to be another term for the so-called harmony of analogy, and a better one, because it does not confound two meanings in one word, and is applied to the art of coloring, whereas harmony is applied to the science of color. Both terms are compatible, for when harmony is obtained by melodious means our compositions are then perfect. It has been argued that there are two schools of colorists. First, that of harmonious contrast; second, that of melodious intervals; but melody appears to be the proper manner of arranging harmonious colors, in the same way that harmonious notes are uninteresting till a melody is composed. Melody in one color is to some extent similar to playing on one note.

This being the case, how is it that so many apparently inharmonious compositions have been successful? There are many reasons, mostly unrecognized or unthought of. Many rooms have been decorated entirely in dull greens or blue greens, but contiguous rooms may be in hues of yellows and brown, consequently the two apartments together would be harmonious, separately melodious; indeed, our color appreciation would be momentarily increased on passing from one room to the other. Then furniture and art objects generally bring in some contrasting colors. The chief cause, however, is due to the low key in which the large surfaces were colored, the actual amount of pure color being very small, the greater portion being gray, in which the three primaries are present in harmonious proportion. It is seldom, perhaps never, that the three primary colors are absent in decoration, taken as a whole, and including carpets, furniture, everything. All in the room, and all that can be viewed out of the room, must be taken account of, as also the amount of light received into it, and the color of that light. A room decorated in melodious tones of reds, in which no opposite colors were permitted, having a large window looking out upon a green lawn, might be strictly harmonious in daylight, though at night, when the green was shut out, the impression would doubtless be hot and oppressive. It would appear that the older colorists adopted harmony, the presence of the three primary colors, either pure or in combination, in certain rela-

tive proportions, as a rule not to be violated; but they often neglected the subtle melody by which means melodious harmony is most successfully arrived at. Hence their schemes are inclined to be crude and unrefined. The foundation upon which they worked, as to color, but probably not as to proportion, was correct. They worked under the delusion that the contrast of pure primary and secondary colors because harmonious, were beautiful; that bright red and bright green, or bright blue and bright orange, when contrasted, produced perfect composition. It is needless to say that such would be extremely vulgar, unless melodiously arranged either by tones or shades, or by those intermediate hues which would melodiously connect them, or by both. On the other hand, the tendency of modern colorists of the so-called melodious school is to neglect harmony, which should be the foundation of their ideas; mistaking the method for the fact, and producing effects at first pleasing, but eventually becoming tiresome and wearying. It may therefore be concluded that harmony and melody are essential in the art of coloring. The scientific fact that white

ers pay so little attention to this part of the work that one not acquainted with the nature of the operation and results that follow, might suppose it to be a matter of no importance how it is executed. In many cases the work in the picker-room is delegated to one whom the less he knows the better he fills the bill. Not unfrequently is it the case that a hand who can not execute the work in another department is sent to the picker-room. This is all wrong, and against the practice we wish now to speak. The same manufacturers who follow this policy wonder why it is that their yarn is not as smooth and strong and even as that made by their competitors, who use no better stock, or have no better machinery. If they would open their eyes and go into the picker-room more frequently, they would soon see the cause of their failure.

In selecting a picker-room care should be taken to have plenty of space for the machinery, and large floor space for cotton bins as well as room for the finished laps. We would lay extra stress on having plenty of space for bins. When a lot of cotton is received consisting of a number of bales, a



DESIGN FOR A SLEIGH.—FROM LE GUIDE DE CARROSSIER.

light causes three principal color sensations, all of which must be equally excited, otherwise the eye gets wearied and probably injured, must not be neglected. These three sensations are, as it were, the harmonious notes of color; the art of composing them may be termed color melody.

THE NEW U. S. COURT HOUSE AND POST-OFFICE, PEORIA, ILL.

THE drawing we give of this very handsome public building, designed by Mr. Hill, is from a recent number of the *American Architect*.

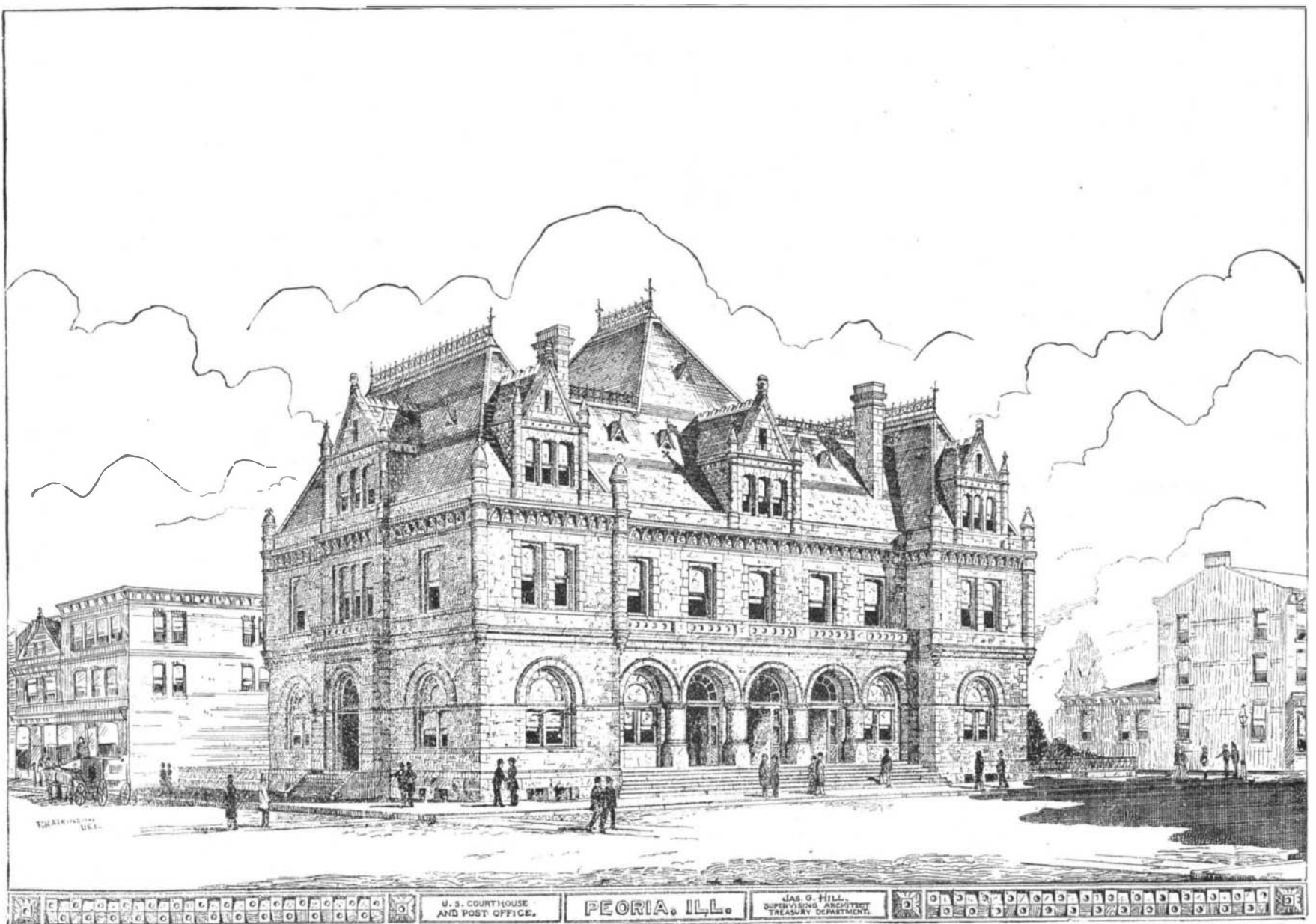
THE PREPARATION OF COTTON.

THE mixing and preparing of cotton for the cards, although comparatively a simple operation, is in reality one of the most important processes in the manufacture of cotton yarns and cloths. Many manufacturers and card-

note should be made of the character of the staple, whether it is all of one kind or of several different varieties and qualities. Each variety should be placed by itself, and a memorandum taken of the number of bales in each lot.

Having received all of the lot, be it ten, twenty, or fifty bales, we prepare to open and mix it. We take one or two bales of that kind of which we have received the most, and open the bale, removing hoops and bale cloth. Spread the staple out thinly over the floor of the bin, shaking and loosening it as much as possible. Then take a proportionate share of one of the other varieties and proceed in the same manner as with the first, spreading it out in a layer on top of the first lot, and so on until there has been spread and opened out a proportionate share of all the varieties. Repeat this until all the bales have been thus spread out in successive layers. This is done so that the different qualities and varieties may get thoroughly mixed, and all parts of the bin may contain equal proportions of every kind.

This seems simple and is easily done, yet is neglected by



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