

A HOUSE LIGHTED BY CENTRAL BAY AND SKYLIGHT WINDOWS
THE SOWDEN HOME, HOLLYWOOD, CALIFORNIA
LLOYD WRIGHT, ARCHITECT

IN THE CAUSE OF ARCHITECTURE

BY FRANK LLOYD WRIGHT

VI. THE MEANING OF MATERIALS—GLASS

PERHAPS the greatest difference eventually between ancient and modern buildings will be due to our modern machine-made glass. Glass, in any wide utilitarian sense, is new.

Once a precious substance limited in quantity and size, glass and its making have grown so that a perfect clarity of any thickness, quality or dimension is so cheap and desirable that our modern world is drifting toward structures of glass and steel. Had the ancients been able to enclose interior space with the facility we enjoy because of glass, I suppose the history of architecture would have been radically different, although it is surprising how little this material has yet modified our sense of architecture beyond the show-windows the shopkeeper demands and gets.

How that show-window plagued the architect at first and still teases the classicist! It has probably done more to show the classicist up as ridiculous than any other single factor.

The demand for visibility makes walls and even posts an intrusion to be got rid of at any cost. Architecture gave up the first story but started bravely above the glass at the second, nothing daunted and nothing changed. The building apparently stood in mid-air. Glass did it.

Crystal plates have generally taken the place of fundamental wall and piers in almost all commercial buildings; and glass, the curse of the classic, as an opportunity for the use of delicate construction of sheet metal and steel, is a tempting material not yet much explored. As glass has become clearer and clearer and cheaper and cheaper from age to age, about all that has been done with it architecturally is to fill the

same opening that opaque glass screened before, with a perfect visibility now, except for the use to which the shop-man demands that it be put. The shop! That is where glass has almost come into its own. We have yet to give glass proper architectural recognition.

What is this magic material, there but not seen if you are looking through it? You may look at it, too, as a brilliance, catching reflections and giving back limpid light.

But it is what it is to-day because it may be seen through perfectly while it is an impenetrable stop for air currents, when due allowance is made for its fragility. When violence is done to it, it may be shattered, but a precious feature of the material is that it does not disintegrate.

I suppose as a material we may regard it as crystal—thin sheets of air in air to keep air out or keep it in. And with this sense of it, we can think of uses to which it might be put as various and beautiful as the frost-designs upon the pane of glass itself.

Glass has been servile in architecture beyond the painting done with it in cathedral windows. It has been a utilitarian affair except when used for candelabra, chandeliers or knobs—excepting only the mirror.

The sense of glass as the crystal has not yet to any extent entered into the poetry of architecture. It is too new, for one thing. For another thing, tradition did not leave any orders concerning it. It is strictly modern. Therefore, let us try to understand what it is. The machine has given to architects, in glass, a new material with which to work. Were glass eliminated now from buildings, it would be, so far as our buildings have gone, only like putting our eyes

out. We could not see out or see into the building. We have gone so far with it as to make it the eyes of the building. Why not now combine it with steel, the spider's web, spin the building frame as an integument for crystal clearness—the crystal held by the steel as the diamond is held in its setting of gold—and make it the building itself?

All the diversity of color and texture available in any material is not only available but imperishable, in glass. So far as deterioration or decay is concerned, it is possible now to preserve the metal setting for an indefinite period. And it is the life of this setting alone that would determine the life of the building. It is time to give attention to that setting.

Shadows have been the brush-work of the architect when he modeled his architectural forms. Let him work, now, with light diffused, light refracted, light reflected—use light for its own sake—shadows aside. The prism has always delighted and fascinated man. The Machine gives him his opportunity in glass. The machine can do any kind of glass—thick, thin, colored, textured to order—and cheap. A new experience is awaiting him.

Then why are modern cities still sodden imitations of mediaeval strongholds? Black or white slabs of thick glass have already gone far as substitutes for marble slabs. They could easily go farther for their own

sake, in walls of buildings. Glass tiles, too, are not uncommon. Nor are glass mosaics an unusual sight.

All these uses together would form an incomparable palette for an architect. The difficulty is, architects are bound by traditional ideas of what a building must look like or be like. And when they undertake to use new materials, it is only to make them conform to those preconceived ideas.

Every new material means a new form, a new use if used according to its nature. The free mind of the natural architect would use them so, were the unnatural inhibition of that freedom not imposed upon all by a false propriety due to the timidity of ignorance.

The Persian, the Egyptian and the Moor had most insight concerning the mathematics of the principle at work in the crystal. The Persian and the Moor were most abstract; the Egyptian was

most human. All knew more of the secrets of glass than we do—we who may revel in it unrestrained by economic considerations of any kind, and who understand it not at all, except as a mirror.

As a mirror, the vanity and elegance of the French brought glass into architectural use. Their brilliant salons, glittering with cut-glass pendants and floral forms blown in clear and colored glass, were something in themselves new in architecture. The



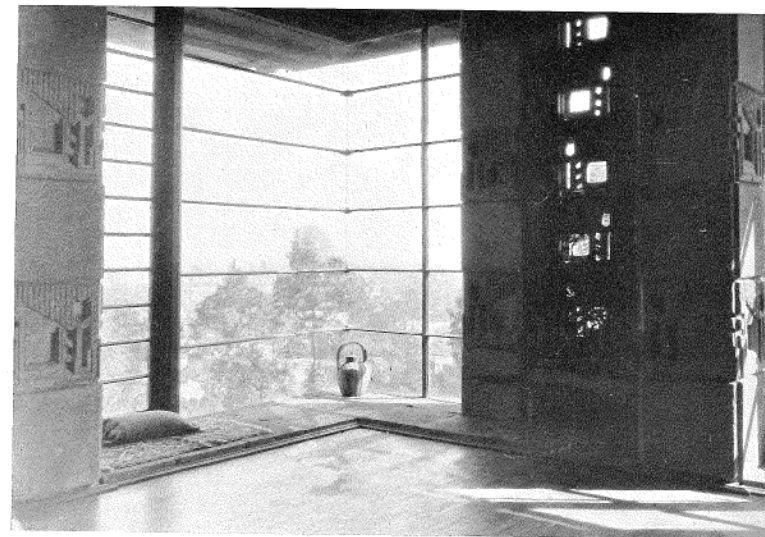
CORNER OF THE BARNSDALL RESIDENCE
HOLLYWOOD, CALIFORNIA
FRANK LLOYD WRIGHT, ARCHITECT

very limitation of the size of the sheet available gave a feature in the joint that adds rather than detracts from the charm of the whole effect of their work.

But now the walls might disappear, the ceilings, too, and—yes—the floors as well. A mirror floor? Why not? In certain cases. Nicely calculated effects of this sort might

ture, if *architecturally* used. To use it so is not easy, for the tendency toward the tawdry is ever present in any use of the mirror.

But to extend the vista, complete the form, multiply a unit where repetition would be a pleasure, lend illusion and brilliance in connection with light-effects

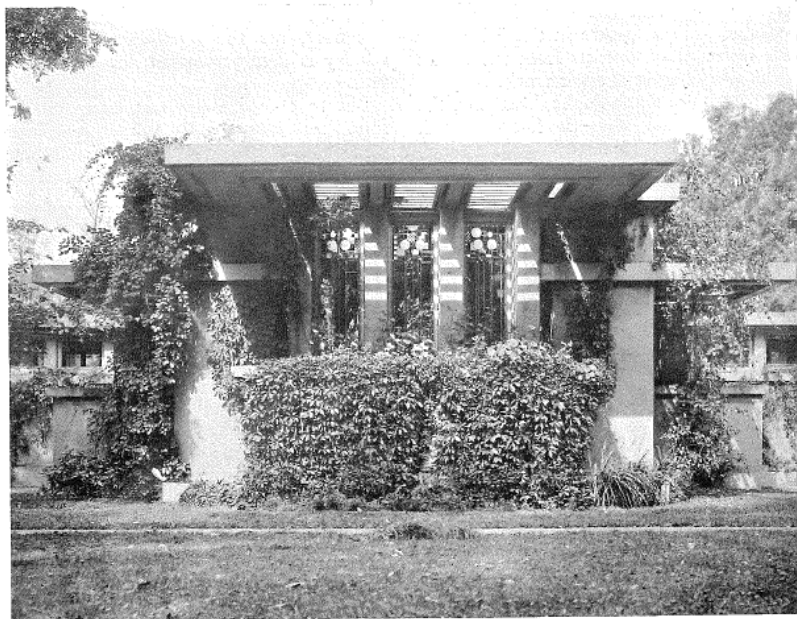


WINDOW OF A RESIDENCE IN HOLLYWOOD, CALIFORNIA
FRANK LLOYD WRIGHT, ARCHITECT

amplify and transform a cabinet into a realm, a room into bewildering vistas and avenues: a single unit into unlimited areas of color, pattern and form.

The Mirror is seen in Nature in the surfaces of lakes in the hollows of the mountains and in the pools deep in shadow of the trees; in winding ribbons of the rivers that catch and give back the flying birds, clouds and blue sky. A dreary thing to have that element leave the landscape. It may be as refreshing and as beautifying in architec-

—all these are good uses to which the architect may put the mirror. As a matter of fact he never uses plate-glass in his windows or indoors inside his buildings that he does not employ the same element in his architecture that the limpid pool presents in the landscape—susceptible to reflections. And this opportunity is new. It is a subtle beauty of both exterior and interior, as may be readily seen in the effect of the exterior if a poor quality of cylinder glass be substituted for polished plate-glass. Perhaps



PLAY HOUSE, COONLEY RESIDENCE, RIVERDALE, ILLINOIS
FRANK LLOYD WRIGHT, ARCHITECT

no one other change in the materials in which any building is made could so materially demoralize the effect of the whole as this substitution.

In the openings in my buildings, the glass plays the effect the jewel plays in the category of materials. The element of pattern is made more cheaply and beautifully effective when introduced into the glass of the windows than in the use of any other medium that architecture has to offer. The metal divisions become a metal screen of any pattern—heavy or light, plated in any metal, even gold or silver—the glass a subordinate, rhythmical accent of any emotional significance whatever, or vice versa. The pattern may be calculated with refer-

ence to the scale of the interior and the scheme of decoration given by, or kept by, the motif of the glass pattern.

I have used opalescent, opaque, white and gold in the geometrical groups of spots fixed in the clear glass. I have used, preferably, clear primary colors, like the German flashed-glass, to get decorative effects, believing the clear emphasis of the primitive color interferes less with the function of the window and adds a higher architectural note to the effect of *light* itself. The kindersymphony in the windows in the Coonley play-house is a case in point. The sumac windows in the Dana dining-room another. This resource may be seen in most of my work, varied to suit conditions. This is a



GLASS AND CONCRETE
FRANK LLOYD WRIGHT, ARCHITECT

resource commonly employed in our buildings but usually overdone or insufficiently conventionalized. Nothing is more annoying to me than any tendency toward realism of form in window-glass, to get mixed up with the view outside. A window pattern should stay severely "put." The magnificent window-painting and plating of the windows of the religious edifice is quite another matter. There the window becomes primarily a gorgeous painting—painting with light itself—enough light being diffused to flood the interior dimly. This is an art in itself that reached its height in the Middle Ages. Probably no greater wealth of pictorial color-effect considered as pure decoration exists in the world than in the

great rose-windows and pointed-arches of the cathedral.

But, the glass and bronze building is the most engaging of possibilities in modern architecture. Imagine a city iridescent by day, luminous by night, imperishable! Buildings—shimmering fabrics—woven of rich glass—glass all clear or part opaque and part clear—patterned in color or stamped to form the metal tracery that is to hold all together to be, in itself, a thing of delicate beauty consistent with slender steel construction—expressing the nature of that construction in the mathematics of structure which are the mathematics of music as well. Such a city would clean itself in the rain, would know no fire alarms—nor any

glooms. To any extent the light could be reduced within the rooms by screens, a blind, or insertion of opaque glass. The heating problem would be no greater than with the rattling windows of the imitation masonry structure, because the fabric now would be mechanically perfect—the product of the machine shop instead of the makeshift of the field.

I dream of such a city, have worked enough on such a building to see definitely its desirability and its practicability.

Beauty always comes to and by means of a perfect practicability in architecture. That does not mean that the practicability may not find idealization in realization. On the contrary. Because that is precisely what architecture does and is when it is really architecture. Architecture finds idealization in realization or the reverse if you like.

Then, too, there is the lighting fixture—made a part of the building. No longer an appliance nor even an appurtenance, but really architecture.

This is a new field. I touched it early in my work and can see limitless possibilities of beauty in this one feature of the use of glass. Fortunately this field has been more developed than any other. The sense of integral

lighting seems to come more easily and naturally because there was no precedent to impede progress. And as it is now with

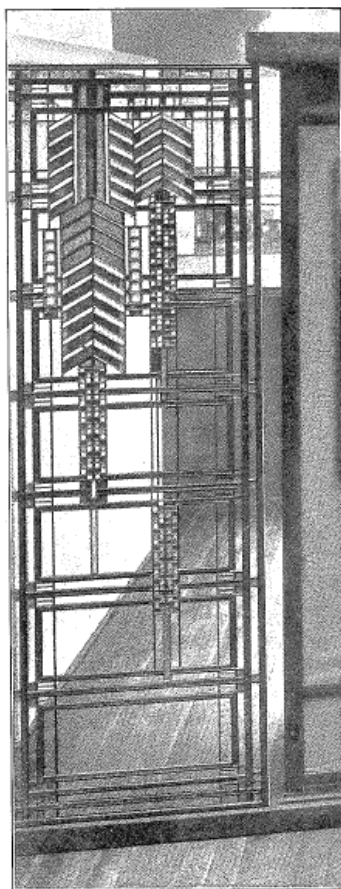
the lighting feature, so will it soon be a disgrace to an architect to have left anything of a physical nature whatsoever, in his building unassimilated in his design as a whole.

Integral lighting began with this ideal in mind in my work thirty-one years ago, as may be seen in the play-room ceiling and in the dining room ceiling of my former house in Oak Park. Also in the ceiling of my studio library in that building. Perhaps it might be said to have begun earlier than that in the Auditorium by Adler and Sullivan where the electric lights became features of the plaster ornamentation. The lights were not incorporated, but they were provided for in the decoration as accents of that decoration.

Glass and light—two forms of the same thing!

Modern architecture is beckoned to a better reckoning by this most precious of the architect's new material. As yet, little has been done with it but the possibilities are large.

This great gift of glass is of the machine,—for today mechanical-processes are as much the Machine as any other of its factors.



GLASS AND BRASS BARS
A WINDOW IN THE DANA HOUSE
1899
FRANK LLOYD WRIGHT, ARCHITECT